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EDITORIAL

HARVEY W. WILEY

1844-1930

AFTER A BUSY militant life, spent in the service of his fellow-man, Harvey W. Wiley has gone to his eternal rest. Champion of wholesome foods and dependable drugs, he unrelentingly carried on the fight, whether or not he had the force of numbers on his side. Practically alone in the field at first, foods that were frauds and drugs that were dregs found in him, a fearful antagonist.



Harvey W. Wiley

That was in the "good old days" when there was no law to punish food sophisticators and drug adulterers.

Once upon a time, kings in India kept a squad of food-tasting slaves, as a special guard against poison in their soups and other dishes. Just before the regal feast these slaves would try the foods on themselves, and so fraught with poison menace was the gastronomic road of many a prince of India—that every once in a while a food-tasting slave would fall on his face or turn up his toes and whisper in his dying breath—"Now wasn't that a dainty dish to set before a king."

Today, thanks to Harvey W. Wiley and his militant followers, his majesty the American Citizen has an overwhelming squad of food specialists, food chemists tasting and testing every food before they are gathered upon his table.

An inspiring memoir of this great benefactor of his day and race appeared in the recent issue of the *Oil, Paint and Drug Reporter* and we are quoting the following passages from that source.

Dr. Harvey Washington Wiley, the first chief of the United States Bureau of Chemistry under the food and drugs act and a

vigorous advocate of pure foods for almost fifty years, died in his home in Washington, June 30. He was eighty-six years old.

Harvey W. Wiley was born in Kent, Ind., October 18, 1844. His father was a farmer. The son worked on the farm when a child while getting such schooling as the neighborhood afforded. In 1863 he went to Hanover College, Hanover, Ind., supporting himself by working, preparing much of his own food from supplies sent from home, cutting the wood for his fire, and borrowing a collar and tie for the graduation exercises. He studied medicine at Indiana Medical College, at Harvard and at the University of Berlin, teaching Greek and Latin to earn the cost of maintaining his educational pursuits. His studies at Hanover were interrupted for a year while he served with the Indiana troops in the Civil War until discharged for illness. His course at Harvard was an intensive one, comprising but three months, during which time he passed all the examinations of the several classes.

About 1872 Dr. Wiley became a teacher of chemistry at Butler College, intending later to engage in the practice of medicine. He was attracted by an offer of the chemical professorship at the newly organized Purdue University, which carried with it the position of Indiana State chemist, and he accepted these positions in 1874. There and then he began his work in the examination of foods which later was to bring him into international prominence.

Dr. Wiley was appointed chief chemist for the United States Department of Agriculture in 1883. At first he devoted himself principally to agricultural chemistry, writing three volumes on its principles and practice, also many booklets on such subjects as "Commercial Fertilizers" and "Mixed Sugars." He did much to foster the development in this country of the beet sugar industry. He persisted in his work in food analysis, however, and in 1901 he began work with his famous "poison squad," a group of twelve young men who voluntarily tested on themselves certain chemicals then used freely in preserving food and believed by Dr. Wiley to be deleterious. The result of this experimentation, published in a report of some 2000 pages, paved the way for the Federal food and drugs act. The draft of this statute was largely the work of Dr. Wiley, and his efforts for its enactment were strenuous and persistent and eventually successful in the passage and signing of the law June 30, 1906.

Enactment of the food and drugs law was the beginning, rather than the end, of Dr. Wiley's troubles in his fight for pure foods. He fought with officials, with experts, and with manufacturers and shippers for almost six years. He resigned his government position in 1912, charging that his activities were being restricted and that the principles of the food and drug act were being paralyzed. In the year preceding his resignation he faced and fought charges that he had illegally allowed Dr. H. H. Rusby, employed as pharmacognosist at the port of New York, excessive compensation. Attorney-General G. W. Wickersham recommended that this act be penalized. President Taft, however, vindicated Dr. Wiley and his associates. The latter's acerbity toward bureaucratic control of his activities persisted until his death and characterized his autobiography which was published about a year ago. His last public appearance was June 3, when he started to testify in the so-called "ergot investigation" in Washington, but withdrew when it was explained to him that the issue was not, as he seemed to suppose, that of a general lack of rigorousness in the enforcement of the food and drugs act. Perhaps the most outstanding victory of Dr. Wiley was his getting the support of President Taft in his condemnation of the use of benzoate of soda as a preservative. The referee board of experts, headed by Dr. Ira Remsen, had reversed Dr. Wiley in his pronouncement that benzoate was harmful.

After leaving the government service Dr. Wiley became director of the bureau of foods, sanitation and health, conducted by "Good Housekeeping." He retired from this position the first of this year because of failing health, and was appointed director-emeritus. His activities brought him many honors in chemical societies, and he was president of the 1920 United States Pharmacopœial Convention. He was a chevalier of the French Legion of Honor and had received honorary degrees from numerous universities in this and other countries.

From the beginning to the end Dr. Wiley was an aggressive fighter for what he considered right.

Such fighting men, are rare, and yet as necessary to progress as they are rare.

Every generation, in every field, profits from the fire and force of men so motivated.

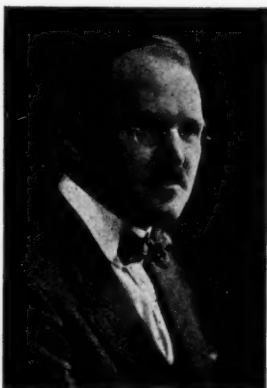
IVOR GRIFFITH.

ORIGINAL ARTICLES

NO MORE PAIN*

By E. Fullerton Cook, Ph. M.

A PATIENT today stands before a fluoroscope, the doctor turns on that mystery ray, commonly known as x-ray, and can actually see the beating heart, the structure of the lungs and the manner



E. Fullerton Cook, Ph. M.

of their functioning or perhaps the working of the entire alimentary system. Yesterday this would have been impossible and unbelievable, perhaps tomorrow we may turn on a y or a z ray, and with clear vision, trace the intricate form and workings of the marvelous network of communication and power, the nervous system which reaches into every corner of the human body. Some day we may have this opportunity to study the mechanism of human power.

Fortunately the picture has been painted in great perfection by those anatomists who have painstakingly traced the sources of impulse, the lines of communication and the responsive cells that leap to obey a command of the will or gather facts for the intellect to analyze and use. Perhaps in life the picture might reveal some detail not now known, or a delicate instrument might register the electric impulses carrying a message from brain to eye, but the picture now is well known and graphically illustrated in the outline before us.

**THE CENTRAL
STATION OF
REASON**

The spinal cord, the medulla oblongata, the cerebrum or brain and the cerebellum, housed in their closely fitting bony shells, constitute the central nervous system and the intellectual center of life. From this central station and to this seat of reason and knowledge pass the sensations

*One of a Series of Popular Science Talks Presented at the Philadelphia College of Pharmacy and Science, 1930 Season.

or impulses which express the will and power of man. Literally millions of tiny fibres transmit the messages back and forth, serving of themselves only as the means of communication. Each fibre is made up of a central core technically known as an "axis cylinder," which transmits the impulses. This is surrounded by a sheath of fatty matter known as *myelin*, and the whole protected by a membranous sheath known as the neurilemma. A nerve is made up of several thousand such fibres, each capable of acting as an independent path of transmission.

If an outgoing nerve be traced it will usually be found to terminate among the epithelial cells of the skin or mucous membrane, ending in something like a capsule or bulb wherein lies the sensory ending. The other terminal of this type of nerve is found in some section of this central system in the form of a nerve cell. These cells are sometimes irregular, somewhat star-like in shape, or again globular, the mass of cells constituting the structure of these vital organs. From the brain or cerebrum which makes up the larger mass of "gray matter" within the cranium, originate and are received those impulses which give expression to intelligence. Here are centered the controls responsible for the sense of smell, for sight, for all voluntary movements, for sensitiveness in face and teeth and other parts of the body, for the appreciation of sound waves, and for the sense of taste.

The spinal cord, at the opposite end of the central nervous system, performs a different function from the brain in that it receives no sensations nor does it direct voluntary movement. It does, however, originate reflex actions, stimulated by impressions made upon it by certain impulses such as heat.

Such phenomena as intestinal peristalsis, the contraction and dilation of the pupil, the reflex action which closes the glottis and the muscular action involved in coughing due to the presence of a foreign body, are illustrations of the action due, at least in part, to impulses originating in the cord. The muscular movements of digestion, of respiration and of walking are also partly related to stimuli originating here, but so interrelated are nerves between the brain and cord that often the former may exercise its superior authority and control what normally functions under the cord.

The medulla oblongata serves as a means of communication between the brain and cord but possesses other important functions.

Here especially are centered the controls of respiration and it has been called the "vital spot" for its serious injury results in almost instantaneous death. It also stimulates reflex action related to the secretion of saliva, vomiting, sneezing, secretion of sweat, the inhibition and acceleration of the heart and other less important functions.

The cerebellum serves primarily in the coordination of voluntary muscular movements. For instance, with this removed, an animal may still raise the foot with normal vigor but will not know where to put it down.

But to complete this picture there must be seen a second system of nerves, known as the "sympathetic." This consists of an aggregation of nerve cells in modular enlargement, usually called "ganglia," mostly ranged on either side of the spinal column. These are closely associated with the nerves of the central system and function in coordination with them but have definite relation to the action of non-striated muscles controlling the circulatory system and secretion glands. Its only direct connection to striated muscle is to the heart. The sympathetic nerves definitely effect secretions, digestion, nutrition and heat production.

In the quest for the magic power of a pain destroyer, it is this delicate system of communication which is involved, for it is seen that the nervous system is the center of all sensation, therefore the seat of pain and one of the keys to its elimination. For immediate relief, a temporary numbing must be produced. If the effect is to be local, only the group of associated terminal nerve endings need be reached, but if general and complete anesthesia is wanted, the very centers of sensibilities must be affected and for the time rendered inoperative. But it must not be forgotten that a prompt return to consciousness and the absence of any injury to the patient are equally essential qualities for such an agent to possess.

There are occasions in every life when pain is experienced; in youth functional disturbances may come from the eating of green apples or contact with a parental strap, or later it may be from the pangs of maternity or a broken leg or one of a thousand possible causes. But pain has always been considered the opposite of pleasure and we ask for quick relief.

Is it any wonder that from the dawn of civilization efforts have been made to overcome this curse?

**EARLY BATTLES
AGAINST PAIN**

Mankind must have always possessed the trait of curiosity, at least it is still a dominant quality influencing the actions of our traditional progenitors and leads many a monkey into trouble. But slow and painful has been the accumulation of knowledge and especially judgments based upon facts.

Primitive men and women must have gone about tasting leaves and roots, seeds and flowers, and then observing the effects. In a higher civilization, the more potent drugs were tested on prisoners or slaves, but it is certain that our knowledge of drug action has come only through the tragic loss of many lives. Among the earliest records of a specific drug capable of relieving pain is one from the writings of the Greek historian, Herodotus, about 500 B. C., who reported that the tribes along the Danube and south to India used a variety of hemp, the fumes from which produced high mental exaltation, followed by sleep. This suggests the narcotic, Cannabis, still in use by the natives of that territory, under the name Hashish and recognized as a narcotic drug today by most pharmacopœias of the world.

In the great ancient civilizations, including Egypt, Assyria and Babylonia, there are evidences that vegetable substances were known and used to produce sedative or anodyne effects. Homer in the *Odyssey* described the use by Helen of a drug which "she cast into the wine and those who drank forgot all sorrow and experienced the lulling of pain and anger." "Mandragora," supposed to have been a solanaceous drug similar to belladonna, was chief among these ancient herbs employed to ease man's sufferings.

MANDRAGORA

One of the tales of antiquity which illustrates the reputation acquired by the mysterious drug mandragora is associated with the campaigns of Hannibal in Africa, about 200 B. C. Being attacked by a large army of savages, he retreated but left on the field a large number of vases containing wine steeped in mandragora. These were captured by the natives who drank freely of their contents and were soon reduced to a condition of stupor. The strategist anticipated this and returning to the field with his army, quickly destroyed the helpless enemy.

In the writings of Dioscorides and Pliny, who lived in the first century, specific reference is made to the steeping of mandragora

root in wine and the administration of this decoction to the patient about to be operated upon, "to render the cutting painless." In the second century, Galen again referred to the "power of mandragora to paralyze sensation and motion."

With so remarkable a reputation, it is strange that so little is known today of mandragora. The only explanation would seem to be that its powers were greatly exaggerated for it is not likely that a drug actually having the potency attributed to mandragora would have been lost. Certain it is that the *Atropa Mandragora* of today fails to measure up to the reputation established by its famous ancestor.

It is true that atropine, a powerful alkaloid from the related plant belladonna, is now largely employed as a treatment preliminary to ether anesthesia, but this drug is used today not for the purpose of relieving pain but only to lessen the mucous and salivary secretions during the operation.

**THE SLEEP-
PRODUCING
SPONGE**

In the third century there are records of the Chinese surgeon, Hoa-tho, using a preparation of hemp to render his patients unconscious during an operation, and for centuries another form of pain reliever was in use known as "Spongia somnifera" or "Soporific Sponge." Theodoric, about the tenth century, described the making of this, calling it a "flavor" from opium, mulberry, hyoscyamus, hemlock, mandragora, and other plants. This liquid was applied on a sponge to the nostrils of the patient to produce insensibility to pain and one may well believe that this combination, not by inhalation but by absorption through the mucous membrane of the nose, could induce effective narcosis. It is even thought that perhaps the sponge, dipped into "vinegar" and offered Christ on the cross, may have been of the nature of the "soporific sponge" and intended to produce a stupor and insensibility to pain.

Hugo recommended the local application of compounds of antimony, mercury, lime and arsenic to an operation site to produce analgesia, but the efficacy of this is doubted although it might have made an effective caustic.

That the physician kept before himself and his patients the ideals of anesthesia is evidenced by many facts, witness a verse by Du Bartas of the middle ages who wrote:

"Even as a surgeon—
Bringeth his patient in a senseless slumber,
And griefless then, guided by use and art,
To save the whole, cuts off the infected part."

Two other drugs, opium and alcohol, have the power to allay pain and lessen susceptibility to suffering and the time of their first use is unknown. The knowledge of the action of opium was not universal for many centuries, in fact its use was limited to certain portions of the Near East until the Arabian school of medicine under Rhazes and Avicenna carried it in the tenth century into Western Europe.

Hippocrates, who was born 460 B. C. and is known as the "Father of Medicine," used the term "opium" for a plant juice having sedative action, although it is not certain that he referred to opium.

Heraclides, who followed Hippocrates, was the founder of the "School of Empirics," and he is credited with being the first recorded user of opium as an anodyne in painful diseases.

**THE PRAISE-
WORTHY
LAUDANUM**

The history and uses of opium cannot be entered into here but after its introduction into Europe it played an important part in medicine. Dr. Sydenham, a famous English physician of the seventeenth century, credited with introducing the liquid preparation known as "Laudanum," wrote: "Of all remedies which a kind Providence has bestowed upon mankind for the purpose of lightening its miseries, there is not one which equals opium in its power to moderate the violence of so many maladies, and even to cure some of them. Medicine would be a one-armed man if it did not possess this remedy."

Opium, or its alkaloids morphine and codeine, are still among the most important drugs in use today. It is true they must be employed with caution and under rigid control to prevent their misuse, but as a preliminary to ether anesthesia, to quiet the patient and lessen post-operative suffering, the use of morphine is almost routine, while codeine has its own place as a sedative in many conditions of irritation or unrest, and that without the dangers usually associated with opium.

The other narcotic, alcohol, older than history, has doubtless been utilized through the ages to render a sufferer less sensible to

pain although today it is rarely administered specifically for that purpose. However, in the days before modern anesthesia, alcoholic drinks were used to produce narcosis before painful operations and to relieve other painful conditions although it was only partially effective.

It may be remembered that in *Cymbeline*, Shakespeare makes Cornelius, a court physician of the seventh century, prescribe a drug which "will stupify and dull the sense awhile . . . but there is no danger in that show of death it makes" and although the drug referred to is but speculative it again indicates the effort of the medieval physician to foster the current belief that such a drug existed.

About the same period Valverdi and other Italian physicians attempted to produce unconsciousness by compressing certain areas in the neck, a process said to have been practiced by the ancient Assyrians for child circumcision.

HYPNOTIC ANALGESIA

Another forward step was taken in the seventeenth century (1661) when Greatrakes produced "magnetic sleep" by making passes over the body and in 1766 when Mesmer evolved his theory of "animal magnetism" which, a century later, evolved into the modern practice of hypnotism. Many cases were reported in which painless surgical operations were performed in India by Esdaile under hypnotic anesthesia. Unfortunately hypnotism as an anesthetic is limited to those patients who are subject to hypnotic suggestion.



1—The Horror of Amputation Before
Anesthesia.

**ANESTHESIA
BY BONDAGE**

But all of these earlier attempts were limited in use and effectiveness and old illustrations and records evidence the usual need, in serious operations, of strapping or holding the patient on the operating table with the consequent horror of frightful suffering. In fact during the century preceding the discovery of anesthesia, it was quite beneath the dignity of most medical men to do surgical work. What was attempted was of the most primitive character, chiefly amputation of fingers, toes, or perhaps the forearm or the leg below the knee, and these were not only painful but dangerous. The introduction of the tourniquet by Petif in 1718 was a marked advance in technique as it largely eliminated the danger of hemorrhage and made possible more time for the operation and the abandonment of cauterizers. It was not until 1745 that the association of barbers and surgeons was abolished in England, by an Act of Parliament, and from that time surgery became more honored as a branch of the medical sciences.



2—An Operation Before the Introduction
of Ether.

The advance in the knowledge of anatomy of this period was another reason for more success in surgery and in fact, the origin of several important operative methods of today date back to this period. However, without a knowledge of bacteria, conditions were often deplorable and it is no wonder that both the patient and the surgeon dreaded the ordeal. Dr. J. Collins Warren, in an address delivered before the American Surgical Association in 1897, said, "The horrors of surgery without anesthetics caused even surgeons

to look upon operative surgery as the lowest, poorest side of their profession. An operation was attended with almost the formality of an execution. The hardiest of doctors are described as steeling themselves to the duty of operating. John Hunter, one of the best known surgeons of this time, says 'no surgeon should approach the victim of his operation without a secret dread and reluctance.' Abernethy felt the strain of operating keenly and is reported to have felt such repulsion to operations that he regarded them as having no place in surgery as a science."

**"LAUDABLE
PUS"**

Not only was the operation painful but the treatment during healing was torture, for no wounds were healed by "first intention" and dressings were forced even between ends of broken bones and into wounds to prevent them from healing on the surface.

Dr. John C. Warren, who performed the first public operation with ether, a year later wrote, "In order to form a proper estimate of the value of the new practice, we should endeavor to realize the mental condition which formerly preceded a surgical operation. As soon as a patient is condemned to the knife what terrors does his imagination inflict? How many sleepless nights and horrible dreams and sinking of the heart does he experience! What apprehension of dangerous bleedings of wounds of vital parts and even sudden death does he paint to himself? And when to these is added the dread of insupportable pain, what a frightful picture presents itself to his mind. No wonder many persons are unable to bring themselves to submit. No wonder that some, worn out to desperation, are led to anticipate their sufferings by a voluntary death."

**"A SPEEDY
BLADE SPARES
MANY AN ACHE"**

Robert Liston in teaching his surgical students two years before the introduction of ether said, "The divisions of the skin must inflict pain but there is a way to render it less severe. The mode of cutting must be acquired to attain this desired end. In the first place, you must not divide the skin by scratches. You must carry the knife completely through the tissues at once, and doing it with rapidity you will save the patient a great deal of pain." Also at this time, many surgeons abandoned the use of the knife and employed only caustics in treating tumors.

**THE DAWN OF
A NEW DAY
IN SURGERY**

Near the close of the eighteenth century, however, with new light in the chemical sciences, there came the hope and promise of a complete anesthesia or unconsciousness. Cavendish in 1766 discovered hydrogen, Rutherford (1772) discovered nitrogen and Priestley (1774) discovered oxygen and nitrous oxide. But for many years little progress was made in the utilization of these or other products as anesthetics. It is recorded, however, that in 1795 Dr. Pearson of Birmingham, England, employed ether, which had been known since 1540, for the relief of asthma and that Sir Humphrey Davy, who, when only twenty years of age, was employed by Dr. Bedoes of Bristol to study the medical effects of various gases and who, after two years of work, wrote an essay in 1799 on "The action of nitrous oxide when inhaled," in which he wrote: "As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place."

Also Faraday, in 1818, wrote: "When the vapor of ether, mixed with common air, is inhaled, it produces effects similar to those occasioned by nitrous oxide." He even called attention to the necessity of using caution in experiments of this kind as "a gentleman was thrown into a state of prolonged insensibility by its use in this way."

ETHER FROLICS

It was also quite popular at this time for lecturers to demonstrate for entertainment certain recently discovered chemical and physical phenomena including the intoxicating character of ether and also for groups of young people to engage in what at that time were known as "ether frolics," when all would inhale the vapor and exhibit the characteristic stimulation, followed by unconsciousness, if carried that far.

Nitrous oxide was similarly used and the *Philadelphia Gazette* of 1820 carried advertisements offering it for sale for that purpose. In fact it was ultimately the effects of these demonstrations and experiences which forced the recognition of these substances as true anesthetics, and strangely enough almost simultaneously in distant parts of the country.

It is recorded that at an entertainment in Athens, Georgia, in 1840, when the effects of ether were being demonstrated, a young

man named Wilhite compelled a negro boy to inhale ether. The boy resisted but it was forced upon him and he became completely insensible. From that time it became a common practice in that district for young people at social gatherings to inhale ether for its effects and the resulting fun.



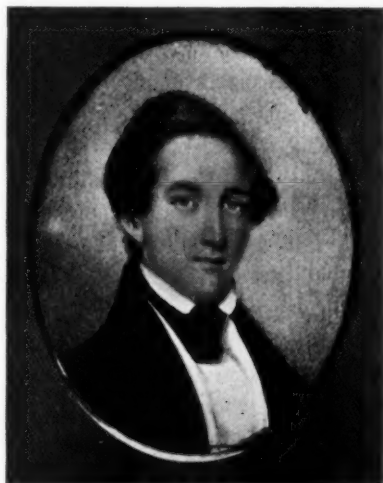
3—Dr. C. W. Long, Who First Used Ether to Render Operations Painless (1842). A Crayon Portrait by His Daughter in 1842.
(Courtesy of the U. S. National Museum.)

Dr. Crawford W. Long, who had graduated from the Medical Department of the University of Pennsylvania a few years before, having participated in such parties, noticed that injuries or bruises were sometimes sustained while unconscious, and that these at the time caused no pain. This suggested its use in operations and in 1842 he and his assistants used it with complete success while performing a minor operation, the patient feeling no pain. He continued its use in other cases but at the time made no attempt to announce his discovery.

In 1844, Dr. Horace Wells, a dentist of Hartford, Conn., also happened to see a platform demonstration of the temporary insensibility produced by the inhalation of nitrous oxide and also observed

that the subject received injuries while unconscious but apparently without pain. Wells determined to try it upon himself and persuaded Colton, who had given the demonstration, to come to his dental office, and administer the gas while his friend Riggs extracted a diseased tooth.

The complete absence of pain was so convincing that Wells interested a Boston dentist, formerly his pupil, named William T. G. Morton, and they arranged a public demonstration at the Harvard Medical School but only with partial success as apparently not enough gas was used. Wells was hissed from the room by the students and denounced as an impostor and, to quote one of his defenders of later years, the trembling adventurer left the hall, went back to his home heartbroken, friendless, but not despairing.



4—Dr. William T. G. Morton, Who First Publicly Demonstrated the Use of Ether as an Anesthetic (1846).
(Courtesy of the U. S. National Museum.)

**ETHER
"ARRIVES"**

Morton, however, continued his experiments and also tried ether at the suggestion of a friend, Prof. Charles T. Jackson, who as a chemist was doubtless familiar with the suggestion of Davy and Faraday. Convinced of its efficacy by experimenting on animals, at last Morton inhaled it himself and on returning to consciousness was convinced of the value

of his discovery. Later he used it on a dental patient, Eben Frost, from whom he extracted a tooth and now, with confidence, he gives a public demonstration at the Massachusetts General Hospital on October 17, 1846, with Dr. John C. Warren operating. All were instantly convinced of the importance of the discovery and announced it to the world but Morton and Jackson try to patent it, under the name "Letheon" and while this was not allowed, it cast temporary discredit upon their part in the discovery.

It is of interest to note that Dr. Warren who performed this first public operation with ether anesthesia was at that time the leading surgeon in New England if not in this country but was well advanced in years. It is the more to his credit that he was willing to become a pioneer in this field and then most energetically to develop and promote its uses in surgery. Dr. Oliver Wendell Holmes, a contemporary, said of him, "We confess it to have been a noble sight when an old man was found among the foremost to proclaim the great fact—strangely unwelcomed as well as improbable to some who should have been foremost to accept it—that pain was no longer the master but the servant of the body."

**THE STUBBORN-
NESS OF THE
HUMAN MIND**

Looking back upon this period it seems impossible that, with the need so pressing, the world should have had within their grasp the blessings of painless surgery for almost a half century before a few brave men had the vision and the courage to try it. The pointed suggestions from Davy and Farraday and the actual demonstrations repeatedly made upon the entertainment stage should have persuaded someone, years before, to put it to trial.

As Ashurst says, "Surgeons went on in every country cutting and burning, and patients went on writhing and screaming until October 16, 1846, when surgical anesthesia became the priceless heritage of the civilized world.

Dr. Holmes, while speaking to Harvard medical students in 1847, about this discovery, said: "In this very hour while I am speaking how many human creatures are cheated of pangs which seemed inevitable as the common doom of mortality and lulled by the strange magic of the enchanted goblet, held for a moment to their lips, into a repose which has something of ecstasy in its dreamy slumbers. The knife is searching for disease, but the fierce extremity of suffering

has been steeped in the waters of forgetfulness, and the deepest furrow in the knotted brow of agony has been smoothed forever."

**HAIL THE FIRST
ANESTHETISTS!**

With Wells, Morton and Jackson, all claiming credit for the great discovery and Long then bringing evidence of his own priority as a user of ether for anesthesia, it is not surprising that for years there existed a bitter controversy over who should be awarded the honor of first discovering a general anesthetic. Congress was importuned to award Morton \$100,000 in recognition of his service to humanity. Groups of eminent physicians, medical societies, editors and congressmen took part in the discussion, and several congressional investigations were conducted. No official decision was finally rendered and ultimately the three contenders, Wells, Morton and Jackson all died tragic deaths in disappointment and poverty, and while Long never asked for any reward he did ask for official recognition of his claim and this today seems to be generally accepted.

To indicate the heated character of this controversy the following quotation from a Virginia editor who has espoused the cause of Wells is copied: "Defrauded of his honor, betrayed by his friends, deserted by good fortune, his body shattered by the constant use of all sorts of excitants, still experimenting on himself, his mind ill-regulated, impulsive, tortured by the cruel fate which seemed to await him—twas more than he could bear. Mankind looked eagerly here and there for their benefactor and found him at last in a suicide's grave."

**HAIL THE FIRST
ANESTHETIZED**

While it required courage and faith for Morton and Dr. Warren to undertake the first public operation under ether, we should not forget the name of Gilbert Abbott, the patient who voluntarily braved the unknown and accepted a death-like experience and with no positive assurance of an awakening.

Dr. William H. Keen, in an address before the Massachusetts General Hospital on "Ether Day," sixty-nine years after the first operation under ether said, "I have often called the attention of my classes to a patient lying limp and apparently almost lifeless on the operating table. Lift the arm and it falls as though it were that of a corpse, touch the sensitive eye and the lids do not move, cut the

tender skin and it elicits no response. Will he ever wake up? May not the flickering flame of life gradually fade away forever? Have



5—Ether Inhaler Patented by Morton and Gould, November 13, 1847.
(Courtesy of the U. S. National Museum.)

I not unwittingly killed this man? Such must have been the insistent questions in the mind of those intrepid adventurers on that first momentous occasion. How eagerly they must have watched the first faint evidence of returning consciousness! Had that young man died then and there for how many years would the blessings of anesthesia been withheld from the human race?"

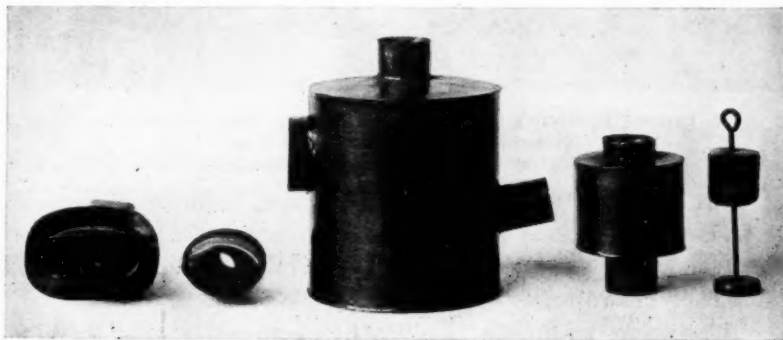
It is of passing interest to know that the term "anesthesia," classically written "anæsthesia," was suggested at the time of its

discovery by Dr. Oliver Wendell Holmes and received instantaneous and universal recognition.

**GENERAL
ANESTHESIA BY
INHALATION**

The epoch-making discovery that nitrous oxide and also ether, when administered by inhalation, produced complete insensibility to pain, was revolutionary and far-reaching in results. Modern surgery was half born at the moment of this discovery, and needed but the work of Pasteur and Lister a few years later to rise full grown in the midst of a needy world.

The discovery of the use of ether quickly spread to Great Britain and the first operation there with ether was in December of 1846 at the University College Hospital at Edinburgh by Dr. Liston. Dr. James Young Simpson, a noted English gynecologist of the period, tried it the next month in midwifery cases, with marked success. A Scotch pharmacist, named David Waldie from Liverpool, who had been doing some experimental work with the recently discovered chloric ether, now known as choloform, met Simpson in Edinburgh and suggested the use of this substance instead of ether. He promised to send some of it on his return to Liverpool



6—One of the First Ether Inhalers, Said to Be Identical With the One Used for the First Public Anesthesia in 1844.

(Courtesy of the U. S. National Museum.)

for Simpson to try, but a fire in his laboratory prevented him from doing so immediately. Simpson's interest being aroused, he secured some of the substance from elsewhere but finding it so heavy doubted its value. However, on November 4, 1847, he and two assistants, Duncan and Keith, determined to try it personally and inhaling some

of it from a tumbler all were rendered unconscious. Simpson was the first to recover and found the others on the floor still unconscious although all quickly recovered. A few evenings later they induced a niece to try it, which experiment was also a success with the result that Simpson began to use chloroform extensively in his practice and his influence rapidly caused it to gain greater popularity in Europe than did ether.



7—Painting Illustrating the First Public Operation Under Ether at the Massachusetts General Hospital in 1846.
(Courtesy of the U. S. National Museum.)

This may have been heightened by a most unfortunate happening in Berlin where the first use of ether caused the death of the patient and thus greatly retarded its general introduction, abroad, in place of chloroform.

Chloroform chemically is "Trichlormethane" having the formula CHCl_3 . This substance had been discovered by Dr. Samuel Guthrie of Jewellville, N. Y., as resulting from the action of chlorinated lime on alcohol. He announced it in May of 1831 and later in the same year Soubeiran of France and Liebig of Germany announced similar products. In March of 1847 Flourens, a French chemist reported to the Academy of Science in Paris that he had produced anesthetic affects on animals by the use of chloroform but it is not likely that Simpson knew of this paper.

The first belief that chloroform had pronounced advantages over ether for general anesthesia because of its more prompt action, its smaller dose and less objectionable odor, was soon offset by the discovery that death more often occurred during its administration than when ether was employed. The first action of ether is that of a stimulant and under its effects the force of heart action is increased while chloroform is a powerful sedative and depressant, acting directly upon the heart and this difference in physiologic action explains the great danger from the use of chloroform.

Having already discussed the structure of the nervous system, it will be realized that any substance which paralyzes the entire system will cause instant death. However, if the agent of anesthesia is selective and at first only renders inoperative the sensory nerves and is held at that point, leaving those nerves still functioning which control the heart and respiration and the other involuntary forces, then life will not be endangered. This is why the anesthetist, the one who administers the anesthetic, performs a part equally or even more important than the surgeon, for those who administer the anesthetic literally holds the spark of life in their hands. That is why the pulse and the breathing and the reflexes are so closely watched throughout anesthesia.

Keep in mind the importance of the anesthetist in every operation; not only is life itself in his hands but the method of administration is often responsible for the absence from or equally the suffering attending post-operative complications involving bronchial or pulmonary inflammation. Only an experienced and specially trained operator should be permitted to administer the anesthetic.

At first ether and chloroform alone were available for general anesthesia, nitrous oxide being employed primarily for dental operations, mainly the extracting of teeth, when only a momentary insensibility was required. But the scientist is ever striving for improvements so that a number of other substances have been tried including the so-called "A. C. E. mixture" (alcohol 1, chloroform 2, ether 3 parts), which has little use today. The most important of the new anesthetics for inhalation is Ethylene, a gas which seems to be meeting with general favor notwithstanding its great inflammability and the necessity for extreme caution during its use. Ethyl chloride and acetylene are also used to some extent for general anesthesia.

Another modification of the older methods is the return to nitrous oxide for the initial stages of anesthesia, its effects and administration being less difficult for the patient than straight ether. When a state of complete unconsciousness is secured, the anesthesia may be maintained by the introduction of the particular anesthetic preferred.

The technique of administration has been studied intensively for years and conditions and preferences will govern the selection of the method to be followed.



8—Modern Ether Anesthesia, Painless and Aseptic.

ANESTHESIA BY RECTUM

This method is applicable only in special cases such as in the use of the bronchoscope when ordinary methods would not be applicable.

Usually the patient is anesthetized by one of the usual methods and the anesthesia only maintained by the injection of an ether mixture into the rectum.

The usual mixture employed consist of 75 per cent. of ether with 25 per cent. of olive oil. This method is relatively new and is

generally believed to involve greater danger than other methods and therefore should be used only in emergency and then only by those of large experience.

**SPINAL
ANESTHESIA**

This type of anesthesia is brought about by the injection of a special anesthetic, such as solutions of procaine (novocaine), tropacocaine, stovaine, apothesine, or alypin, directly into the spinal column where resides the cerebrospinal fluid.

The effect is ordinarily that of rendering the patient insensible to pain and incapable of motion, but with a retention of consciousness. The latter fact is sometimes objectionable and as the period of anesthesia is for only about one hour a long operation may later require the administration of ether.

This method is much more extensively employed in Europe than in America and has uses and advantages under special conditions.

**GENERAL
ANESTHESIS BY
INTRAVENOUS
INJECTION**

Chlorbutanol, chemically Trichlortertiarybutylalcohol, also sold as chloretone, has been used by injection, especially in experimental animals, for the production of general anesthesia. Its chief use, however, is as a preservative for hypodermic solution and its solutions as local anesthetics.

A drug of the barbituric acid group, sold as sodium amytal, chemically sodium iso-amylethyl barbiturate, seems to promise a revolution in general anesthesia. By the method most frequently employed, a solution of this drug, in carefully calculated dose, is injected directly into the vein while the patient is still in bed and before the needle is withdrawn the patient will have lapsed into complete unconsciousness and will remain so for a number of hours, thus avoiding the mental and nervous strain of preparation for ether anesthesia, the unpleasantness of inhalation administration and the early post-operative conditions so often distressing and dangerous.

The method has not been used sufficiently to know its full adaptability, but its development is looked upon by many as a distinct contribution to the practice of anesthesia.

Magnesium sulphate in 4 per cent. solution has also been used for producing general anesthesia when injected into the veins, as

much as 300 cc. being used, but it cannot be accepted as an anesthetic of proven value for ordinary purposes.

**THEORIES
EXPLAINING
ANESTHESIA**

Many studies have been made in attempts to explain the action of anesthetics but no positive conclusions have been accepted. Meyer and Overton independently called attention to the fact that substances, almost without exception, which produce narcotic, sedative or anesthetic action are soluble in liquids, or fatty bodies, and also soluble in water. Reicher suggested that the liquids are washed out of the brain.

Nernst suggested the theory that as cell stimulation is brought about by sudden changes in the electric potential of a cell, due to the concentration of ions at its surface, and as anesthetics would alter the liquid at the surface of the cell, that this might explain the phenomena.

Still another theory involves the removal of the liquid at the cell's surface with a consequent reduction in the surface tension as the fat is dissolved, with a consequent lessening of cell function. In 1911, Vesworn suggested that the presence of anesthetics would likely change the rate of oxidation in exposed cells and thus bring about a condition of asphyxia. None of these theories, however, are entirely satisfactory as explanations, although it is generally accepted that anesthesia brings about a chemical change in the protoplasm of the cell.

**ANALGESIA IN
CHILDBIRTH**

To relieve the intense pain of childbirth has been one of the aims of the obstetrician. Probably the most frequently employed method is the administration of a small amount of ether by inhalation at the critical moment, to partially relieve the mother of suffering, but this is used with caution and only when the pains seems unbearable lest it may cause too great muscular relaxation.

A few years ago much publicity was given to a method for which was promised a complete relief from pain in labor—it was called "twilight sleep" and was found to consist of an injection of a mixture of two alkaloids, scopolamine and morphine. Unfortunately, the promises did not materialize, for, while it does relieve the pain, it was found that these drugs must be used with extreme caution since they often cause most undesirable symptoms both in the mother

and newly born infant, sometimes fatal to either or both. It should only be used in special cases.

More recently, it has been found that a mixture of ether, alcohol, quinine, hydrobromide and mineral oil, injected into the rectum by what is known as the Gwathmey method is giving genuine relief.

Still another method of great promise is the use of the substance sold as sodium amytal (sodium iso-amylethyl barbiturate) which is still in an experimental stage but is of great promise for administration, preferably by rectum, to obstetrical patients.

LOCAL ANESTHETICS

Conditions often arise when a local inflammation or infection calls for treatment or operation and it is not desirable to induce complete or general anesthesia. Perhaps a tooth is to be extracted, a boil opened, or some other minor operation necessitated. Here the local anesthetic often finds a very useful application. Aconitine, veratrine, menthol, and a few other substances have long been known to exercise a numbing action upon the nerve endings when applied locally, but this has never been a complete anesthesia. However, when Koller in 1884 demonstrated the effect of injecting a weak solution of the alkaloid cocaine, directly into the tissues surrounding an area to be treated, he opened a new era for surgery, since this injection produced complete insensibility to pain in the local area. Cocaine is the active constituent of the Coca leaf, that remarkable drug from South America which was found by the Spaniards to be in use by the natives as they climbed the Andes or were subjected to long and arduous tasks. The mere chewing of a few leaves of coca seemed to render them insensible to fatigue or hunger, the Indian often going for days without other food. Such an unheard of virtue called for investigation and the alkaloid was discovered with its remarkable qualities.

Unfortunately with its commendable qualities cocaine was soon found to possess others which counter-balanced its merits and made necessary its rigid control. The danger of its producing addicts who suffered severe physiologic reactions is today universally recognized and its sale and use limited by law to the necessities of the physician.

A study of the chemistry of cocaine shows it to be benzoylmethyl-ecgonine and the organic chemist, working from this as a nucleus or suggestion, has produced a number of closely related syn-

thetic compounds some of which are equally efficient as anesthetics but are not habit forming.

Among the most important of these cocaine substitutes is Procaine (Novocaine) which is chemically an amino benzol and exerts a paralyzing action on all nerve tissue if in proper concentration. Solutions of from 0.1 to 2 per cent. strength are used and may be sterilized by boiling without decomposition.

Numerous other drugs for the same purpose have been developed among them being Tropacocaine, Stovaine, Eucaïne, Alypin, Apothésin, Butyn, Holocaine and Tutocaine. Time will not permit a detailed description of these, but they all belong to this class of compounds, although they have varying degrees of toxicity and solubility and each must be subjected to a careful study to determine its specific adaptability to the conditions under consideration. A special form of local anesthesia is called for in that intensely painful disease known as "Tic douloureux" which is a neuralgia of the fifth nerve, located in the face. In this treatment alcohol is injected into the nerve ganglia, passing the needle between the last two molars, produces a relatively permanent paralysis of this nerve and relieves the pain.

LOCAL

ANESTHESIA BY REFRIGERATION

Insensibility to pain has been produced through the numbing of tissue by refrigeration. This method is limited in application and in the area to be anesthetized, through the danger of permanent injury to the body cells should these be frozen. If only a small field of operation is involved, one of several methods may be employed to render the part less sensitive, but always with great care to avoid excess freezing. The most common practice is to spray ethyl chloride upon the skin until the part is well chilled and then to operate quickly. Ethyl chloride is a very volatile liquid, marketed in hermetically sealed glass tubes which are fitted with a valve and nozzle from which a fine spray may be projected at will upon the skin. As this liquid quickly volatilizes it absorbs the necessary heat from the skin and this produces an intense cold. Ether vapor has been similarly used, also ice and more recently "carbon dioxide snow," better known as "dry ice."

The latter, however, requires extreme care less over refrigeration results.

**ANALGESICS OR
ANODYNES**

Many persons suffer periodically from intense pain in some localized area and refer to the condition perhaps as "headache" or neuralgia. This sometimes becomes very distressing and relief is often sought by the use of what is known as an analgesic, a term meaning painlessness. Among the older drugs of this class are aconite and its alkaloid aconitine which act as depressants for the sensory nerves when applied locally over the affected area.

However, a new group of drugs have come into use in this field during the last forty years with the development of the chemistry of coal tar synthetics, and these today are extensively used under the direction of physicians and also as a household remedy.

Their indiscriminate use, however, for the relief of pain is not without danger although the names antipyrine, acetanilid, acetphenetidin (also known as phenacetin) and amidopyrine are well known representatives of this group. Their use, however, by the laity, without judgment or control, is dangerous as they are heart depressants and tend to develop a habit.

**KNOCK-OUT
DROPS**

The anesthetic in one or more of its forms has played an important part in crime, whether actual or fictitious. The effectiveness of an attack by knockout drops is doubtless often exaggerated, especially in modern fiction when the beautiful girl is thrown into a stupor by the mere passing of a dope-saturated handkerchief over her face. However, in the annals of real crime only too often the victim has been lured by curiosity or excitement into the hands of a gang who usually offer drinks and cards and at the critical moment add to the liquor a few drops of a potent knockout agent and the victim knows no more for hours, if he ever wakes up, and in the meanwhile the gang have "cleaned him out." It may be remembered by some that this was the defence of Evelyn Thaw when she was involved in the famous Thaw-White murder case. She claimed that she was given a few drops of dope in a drink and was unconscious for hours.

There can be no question of the possibility of such a happening and only too often such "drugging" has been fatal since the administration is ignorantly done and by those who have no thought beyond the immediate effect and their get away

ELECTRICITY One theory, among the most recent and already mentioned, explains anesthesia by showing that there is an alteration in the electric conductivity of cell membrane.

In its application experimentally a rapidly interrupted (6000 to 7000 times per minute) direct current is used and an analgesia produced which permits of minor operations without pain, although the patient remained fully conscious. This method, however, has possibilities which further experience may prove to be of great value.

It has also been used with success in overcoming insomnia, producing what has been called "electric sleep."

THE MORE IMPORTANT BOOKS CONSULTED WERE

Anaesthetics and Their Administration, by Frederic W. Hewitt.

The Influence of Anesthesia in the Surgery of the Nineteenth Century, by J. Collins Warren.

Anesthetics in Practice and Theory, by Bloomfield.

Pharmaco-Therapeutics, by Cohen-Githens.

The Art of Anesthesia, by Flagg.

Text Book on Surgery, by Babcock.

A DRAMATIC SKETCH DEALING WITH IMPORTANT EVENTS CONNECTED WITH THE FOUNDING OF THE COLLEGE

By Charles H. and Millicent R. LaWall

ALL OF THE SCENES are laid in early Philadelphia of slightly over a century ago. The audience will make allowances for the absence of appropriate scenery and will imagine the scenes as described, as was done in the early days of the theatre.

Dramatis Personae, in the Order of Their Appearance

Elizabeth Marshall (known as Betsy Marshall), a woman pharmacist in early Philadelphia, who managed the store at 56 Chestnut St. (now No. 214), belonging to her aged father, Charles Marshall

Ada S. Capwell
Matilda Pennypacker, a young friend of Betsy's.... Evelyn L. Card
Frederick Brown, clerk in the store of Charles Marshall,

Andrew H. Walsh '29

NOTE: It was a conversation between Harry Troth and Peter Lehman that led to the founding of the College.

Henry Troth, Quaker druggist and apothecary, whose establishment was on High (now Market) Street below Seventh,

John E. Kramer '25

Peter K. Lehman, a druggist whose store was on the south side of High Street, near Tenth, and was distinguished by a golden lion used as a sign Paul C. Wieseman '29

Stephen North, a druggist at Second Street near Christ Church. He presided over the Founders' Meeting in Carpenters' Hall on February 23, 1821 Ralph L. Calvert '21

Peter Williamson, a druggist and apothecary in Southwark. He acted as Secretary of the Founders' Meeting in Carpenters' Hall Harvey P. Frank '13

<i>Dr. Samuel Jackson</i>	<div style="display: inline-block; vertical-align: middle;"> <div style="font-size: 3em; vertical-align: middle;">{</div> <div style="display: inline-block; vertical-align: middle; text-align: left;"> Members of a committee appointed to decide upon the advisability of founding a College of Apothecaries. This Committee also included Stephen North, Peter Williamson and Fred. Brown. </div> </div>	Geo. W. Perkins '25
<i>Daniel B. Smith</i>		Wm. W. Stoneback '17
<i>Robert Milnor</i>		Linwood F. Tice '29
<i>Samuel Biddle</i>		Eugene Catteau '29
<i>Charles Allen</i>		Morris G. Acton '26

Charles Marshall, the Nestor of Philadelphia Pharmacy, who was 77 years of age when he accepted the Presidency of the Philadelphia College of Pharmacy Charles C. Pines '21

Samuel P. Wetherill, Chairman of the First Board of Trustees. A gentleman farmer with a scientific education and a desire to aid a worthy cause Edmund McLaughlin '30

Scene I. The corner of Second and Chestnut Streets. Time, Monday, February 5, 1821; morning.

(This scene has no direct connection with subsequent events. It is included for the purpose of providing atmosphere corresponding to the period.)

Scene II. Corner of Eighth and High Streets (now Eighth and Market). Time, Wednesday, February 7, 1821; morning.

(A meeting was held in Carpenters' Hall on February 23, 1821 (which is considered as the date of the founding of the College), which was attended by many druggists and apothecaries of the city. This meeting was called for the purpose of giving consideration to the charges implied against the druggists and apothecaries of the city by the resolutions adopted by the Trustees of the University of Pennsylvania.)

NOTE: It will be remembered that a century ago the term "apothecary" was used to designate a pharmacist who sold medicines at retail, while the term "druggist" was restricted to one who sold drugs at wholesale.

This meeting was presided over by Stephen North, and Peter Williamson acted as secretary.

This meeting was not entirely harmonious. The minutes show that there was an objector present who frequently interpolated motions which would have had the effect of postponing action. These motions were all voted down by a large majority and the outcome of the meeting was that a special committee of nine was appointed to draft a plan to form an organization to correct the evils complained of in the University resolutions.)

Scene III. A room in the house of Stephen North showing the final conference of the Committee which had been appointed at the previous meeting in Carpenters' Hall on February 23, 1821. Time, Monday, March 12, 1821; evening.

(The second meeting of the Founders was held on Tuesday, March 13th, as scheduled. and the report of the Committee as formulated in Scene III was unanimously adopted, and it was agreed to hold an organization meeting on Tuesday, March 27th, at which time officers of the new College would be elected and the Constitution presented.)

Scene IV. A room in the home of Charles Marshall, where a delegation consisting of Stephen North, Daniel B. Smith, and Samuel P. Wetherill wait upon Charles Marshall and ask him to become the First President of the new College. Time, Wednesday, March 14th, 1821; evening.

(The first stated meeting of the College has taken place on Tuesday, March 27th, at which the following officers and members of the Board of Trustees have been elected:

President, Charles Marshall; First Vice-President, William Lehman; Second Vice-President, Stephen North; Treasurer, William Heyl; Secretary, Daniel B. Smith.

Board of Trustees: Samuel P. Wetherill, Chairman; Charles Allen, Samuel Biddle, Frederick Brown, Daniel Elliott, Samuel Jackson, Peter K. Lehman, Charles Marshall, Jr., Thomas McClintock, Jeremiah Morris, Warder Morris, Daniel Thatcher, Henry Troth, Peter Williamson, Thomas Wiltberger, and Henry M. Zollickoffer.)

Scene V. Same as Scene II, with the same characters—Henry Troth and Peter Lehman. Time, Wednesday, March 28, 1821; morning.

SCENE I. Elizabeth (Betsy) Marshall enters from the right and Matilda Pennypacker enters almost simultaneously from the left.

Betsy: Good morning, Friend Matilda; where is thee going so early in the morning?

Matilda: I was just going down to thy store to purchase some of thy "tulip salve" for my chapped lips which have become worse during the recent cold spell.

Betsy: Several of the young men are on duty already and thy wants will be well looked after.

Matilda (hesitatingly): Is young Frederick Brown in the store this morning?

Betsy: Fie upon thee, Matilda; I fear thee is interested more in him than in thy prospective purchase.

Matilda (confusedly): Oh, no, Betsy, I assure thee it is not the case. But where is thee going with thy basket?

Betsy: I am going to the High Street Market to purchase some supplies for the household; thee must remember that I am a house-keeper as well as an apothecary and a woman of business.

Matilda: I do think thee is very daring to have gone into business, and very bright to have done what thee has for thy father's store.

Betsy: Well, Matilda, necessity is a great driver, and there was nothing else for me to do. Is thee going to market this morning?

Matilda: No, I have already been there. Thee will do well to buy thy butter from the Germantown farmer named Ludwig; he has excellent butter today for fifteen cents a pound.

Betsy: My, but prices are getting high. Last winter the price of butter was never above twelve cents, and eggs are also scarce. Last week I had to pay seven cents a dozen for them, while a few months ago they were only four cents.

Matilda: I see thee has a new warm fur coat this cold morning.

Betsy: Yes, I purchased the skins last month for twenty-five cents each, which is rather high for skins, but the tailor on Mulberry Street made them up for me very reasonably.

Matilda: I am glad that I met thee for I was going to ask thee if thee had been at any of the exhibitions of the new "exhilarating gas." I have been reading the advertisements and they sound very thrilling.

Betsy: I take no stock in such doings; I believe them to be sinful. (*Pausing for a moment and then exhibiting some curiosity.*) But what is this new use they are making of this exhilarating gas? I have seen it described in the works of Dr. Priestly, who once called at our store some years ago when he visited our city, in search of some chemicals that were exceedingly rare.

Matilda: Oh, do let me read the article to thee. (*Reads from newspaper clipping.*)

"Nitrous oxide or exhilarating gas will be exhibited in the lower room of the Washington Hall this evening, showing the effects of the nitrous oxide on the human system. From the very respectable company with which the proprietor has heretofore been honored in the city of New York, he is led to anticipate a pleasing result from the intended exhibition in this city.

"Having had much experience in the preparation of the gas, and the materials having been prepared by a scientific chemist of this city, the public may be assured that the same will be administered in its purity, and as several respectable gentlemen have already volunteered to inhale the gas, it is to be presumed that they will be highly gratified, from the variety of effects which this extraordinary substance produces on those who respire it.

"Tickets fifty cents each. One ticket will admit a lady and a gentleman. Tickets to be had at the Bar at the Mansion House Hotel, and the Bars of the other principal hotels of this city, at Mr. Sixtes, opposite Washington Hall, and at the door this evening. To commence at 7 o'clock."

What does thee think of that? Does it not sound thrilling?

Betsy: It does not sound respectable, and I would advise thee to avoid it, even if thee should find some older person to take thee, for surely thee would not go alone.

Matilda: Indeed I would, if I could get away from home. I went alone last October to see the man go up in the balloon in the fields out beyond Centre Square at Broad and High Streets.

Betsy: Thee is a very reckless young girl, Matilda. I do not know what the youth of today is coming to. (*Glancing up the street beyond Matilda.*) But see, here comes thy friend Frederick Brown on his way to the store; thee can walk along with him, which I think will suit thee well.

(*Enter Frederick Brown from the direction in which Miss Betsy had come.*)

Frederick Brown: Good Friend Betsy; good morning, Friend Matilda.

Betsy and Matilda (almost simultaneously): Good morning, Frederick.

Frederick: I am indeed fortunate this morning in meeting both of you.

Betsy: Where has thee been so early this morning?

Frederick: I have just been down to the landing at Dock Creek to see a friend who sailed for Savannah this morning on the brig America, which was compelled to leave thus early to take advantage

of the favorable tide, and while I was there the new steamboat came in from Baltimore, loaded with freight and passengers.

Betsy: I like not these new inventions like the steamboat with their foul smoke and the danger of the boiler bursting any minute; but I believe they are but a passing fad and will never replace the sailing ships.

Frederick: I fear they will, Betsy, for they are dependent neither on wind nor tide, and if they ever build them large enough and safe enough to undertake long voyages along the coast, or even to cross the Atlantic, they will give added security against the pirates and buccaneers which still infest the Spanish Main and which take such heavy toll of single ships who dare passage without convoy.

Matilda: Has thee heard of the new stage coach line to New York? It is called the Union Line of Post Coaches, and leaves from Judd's Hotel. Father made the trip last week and was only a little more than twenty-four hours in reaching New York. He left Philadelphia at 9 o'clock in the morning, and he says they partook of dinner at Trenton, where they first changed horses; then they arrived in New Brunswick at dusk in time for supper and lodging; the next morning, after an early breakfast, they resumed the journey to New York, which they reached at 11 o'clock, in ample time for dinner. The fare is reasonable, too—only six dollars.

Betsy: I think the world is traveling entirely too swiftly, and that ill will come of it.

Frederick: I have read in the foreign news columns of the *Philadelphia Gazette* that a Welshman has invented a steam engine which runs upon the highways on huge wheels, but I doubt that such contrivances will ever be able to compete with the wonderful canals which are now being constructed in our great State and also in our sister State of New York.

Betsy: Does thee really think so, Frederick?

Frederick: Indeed I do, and I am confirmed in my opinion by the ease with which these undertakings are now financed by lotteries. Even our own State of Pennsylvania has entered the list of States that replenish their treasuries in this manner.

Betsy: Speak not to me of lotteries; their influence is filled with evil.

Matilda: But dear Betsy, they must be respectable, for the spire of Christ Church was built by funds collected in this way.

Frederick: Well, time will tell. In the meantime it should be our duty to do anything possible to maintain Philadelphia as the foremost city in our country in population; but I fear that New York is gaining, as our last census showed us to have about 138,000 souls, while New York was barely 25,000 behind us.

Betsy: These large cities—they, too, distress me. I liked Philadelphia much better in my girlhood days when the green fields and the woods began at Tenth Street. But I must be going or I will lose my opportunity to choose the finest vegetables and poultry. Good bye, Frederick; good bye, Matilda.

(Exit Betsy, in direction opposite to that from which she had entered.)

Frederick: Which way is *thee* going, Matilda?

Matilda: I was going to the drug store where *thee* is employed, to make a small purchase.

Frederick: Why then, this is an unexpected pleasure. I shall have a walk with *thee* to complete my morning's happiness.

(Exit Frederick and Matilda in direction opposite to that taken by Betsy.)

SCENE II. Time, Wednesday, February 7, 1821. Place: the corner of Seventh and High Streets near the drug store of Henry Troth, which was on High Street just below Seventh.

(Henry Troth and Peter Lehman approach from opposite directions and meet in center of stage.)

Henry Troth: Good morning, Peter.

Peter Lehman: Good morning, Henry. I was just coming to thy store to talk with *thee* for a few minutes, if *thee* has the time.

Henry: And *I* was on my way to *thy* store to talk with *thee*; perhaps it is on the same subject that we sought each other.

Peter: I have no doubt whatever that it is. Has *thee* heard of the action of the Board of Trustees of the University of Philadelphia, concerning the degrees which are to be conferred upon some of our fellow apothecaries and druggists, and the plans for the lectures which are to be given to our apprentices?

Henry: Indeed I have, and I have already procured a copy of these resolutions, which are to be published in our Philadelphia papers in the near future.

Peter: Thee has been more fortunate than I, for my knowledge is based only on hearsay. Ever since Dr. Coxe had such ill success with the course in pharmacy which he offered of his own accord several years ago, and which was so poorly attended that it had to be abandoned, he has had a desire to force his plans upon us without consulting us or seeking our aid. Is the matter serious? Let me hear the resolutions, if thee has them with thee.

Henry: Thee knows also that Dr. Mease had the same ill success a few years previously.

(Pulling paper from his pocket, and preparing to read):

"University of Pennsylvania

"At a meeting of the Trustees of the University, Tuesday, February 6, 1821.

"*Resolved.* 1. That the degree of Master of Pharmacy be and is hereby instituted to be conferred hereafter by the Trustees of this University, on such persons exercising or intending to exercise the profession of an Apothecary, as are and shall be duly qualified to receive the same.

"2. That the Faculty of Medicine be requested to report to their Board, at their next meeting, a proper form of Diploma; also a list of such Apothecaries in the city and liberties of Philadelphia as are desirous, and in their opinion deserving of obtaining the degree of Master of Pharmacy; and unless sufficient reason to the contrary shall appear, the degree of Master of Pharmacy shall be conferred on such individuals respectively.

"3. That every person who shall have served a regular apprenticeship of at least three years, with a respectable Apothecary or a Master of Pharmacy, and shall exercise or intend to exercise the profession of an Apothecary in this state, or elsewhere, may, on application to this Board, obtain the degree of Master of Pharmacy. Provided, he shall produce a certificate of the Faculty of Medicine, signed by the Dean thereof, of his being qualified to receive the same; which certificate the Faculty may grant on the attestation of the Professors of Chemistry, Materia Medica, and Pharmacy, who shall have examined the candidate; and also a certificate of his good moral character.

"4. That in future it shall be requested for obtaining such a degree, that the candidate shall have attended at least two courses of Lectures on Chemistry, Materia Medica, and Pharmacy, in this University.

"Extract from the Minutes, Edward Fox, Secretary."

(At close of reading, Henry Troth looks up and says):

Henry: I have also heard on good authority that the lectures which have been planned for our apprentices are to be given from

9 until 11 o'clock in the morning and from 12 until 2 in the afternoon.

Peter: Henry, this won't do! The University has no right to be taking our boys away at noon to make them M. P.'s. What can we do about it?

Henry: We must act energetically and quickly if we are to counteract this move. I suggest that we consult as many of our friends as we can trust in the matter and call a meeting in some hall where such assemblages are permitted, and discuss the matter thoroughly and take such action as we deem advisable.

Peter: I agree with thee entirely. Suppose we go now and consult Stephen North and others of our friends and hasten the consummation of our plans.

Henry: Agreed. Let us go immediately. It is but a short walk to Stephen's store, which, as thee knows, is on Second Street next to Christ Church.

(Exit both in the direction from which Henry Troth had come.)

SCENE III. A room in Stephen North's house over his store, next door to Christ Church on North Second Street. Time, Monday, March 12, 1821, evening.

Stephen North seated in a chair at a large table around which are arranged eight other chairs. (A knock sounds at the door of the room.)

Stephen North: Come in.

(Enter Peter Williamson.)

Peter: Good evening, Stephen.

Stephen: Good evening, Peter, thee is punctual, as usual, and thee had the greatest distance to come, too from thy place in Southwark.

Peter: I came early in order that we might converse briefly upon the meeting last month at Carpenters' Hall, at which our Committee was appointed, for I have not had time to discuss with thee some of the events of that meeting, although we have met frequently since in connection with the work of the Committee which holds its final meeting this evening.

Thee presided very wisely over that meeting, and courageously, too, in view of the efforts to have our resolutions defeated by repeated motions for postponement.

Stephen: Yes, Peter; it was a trying time and I hope in thy minutes as secretary of the meeting thee did not mention the name of the individual who was such a traitor to the cause of pharmacy and that thee did but mention the bare facts of the motions without reporting the bombastic and vicious manner of their proposer.

Peter: Stephen, I took good care of that, for I would not have such treachery to our cause magnified in the eyes of future generations who might read those proceedings. I feel in my heart that what we do tonight will be of great benefit to the members of our calling, not only now but for scores of years to come.

Stephen: I am very glad thee has acted so wisely, as thee always does. (*Sound of approaching footsteps on stairs.*) I believe the rest of our committee are arriving. (*Goes toward the door and meets the entering group, consisting of Frederick Brown, Henry Troth, Samuel Jackson, Daniel B. Smith, Robert Milnor, Samuel Biddle and Charles Allen. These remain standing until they are severally greeted by Stephen, as follows:*)

Stephen (Taking Frederick Brown by the hand): Good evening, Frederick; I hope that Charles Marshall and his daughter Betsy are both well.

Frederick: Yes, thank thee, Stephen, and both wished to be remembered kindly and expressed the hope that our meeting tonight would bring forth results of value.

(*Frederick takes a seat at the table next to Peter Williamson, whose hand he shakes and both engage in subdued conversation.*)

Stephen (greeting Henry Troth): Good evening, Henry; I am glad to see thee, although I cannot offer thee the warmth and comfort of thy sitting room with its fireplace, in which thee burns the new stone coal brought all the way down from that place with the Indian name up on the Lehigh River; I have forgotten what they call it.

Henry Troth: Thank thee, Stephen; thee means Mauch Chunk. Yes, I have been successful for more than a year in burning it in my sitting room grate, which is equipped, as you know, with extra draft from below, and it certainly is a great satisfaction, for it not only gives out more heat, but it does not need replenishing nearly so often as thy wood fires, although I admit it is more difficult to kindle.

(*Seats himself at the table with the two who are already seated.*)

Stephen (greeting Dr. Samuel Jackson): Good morning, Samuel, thee is very kind to accept membership on this Committee when thee is so busy in thy medical practice, which I hear is growing rapidly.

Dr. Samuel Jackson: Thank thee very much, Stephen; I am glad to be able to do my share, for thee knows that having been an apothecary my sympathies are with them.

(Seats himself at table with the others.)

Stephen (greeting others): Good evening Friends Biddle, Milnor, and Allen; be seated with the others. Now that all of the members of the Committee are here, we may proceed to business.

(In the meantime a cross-fire of conversation has begun at the table.)

Henry Troth (addressing Dr. Jackson): Doctor Jackson, I have had the pleasure of filling a number of thy prescriptions lately, and see that thee is administering the new remedy, Morphinum Sulphate, in a very palatable syrup flavored with sassafras, quite frequently for pectoral affections; indeed the preparation is worthy of being called "Jackson's Pectoral Syrup," and is making thee famous.

Dr. Jackson: I like not such notoriety, and I am half-minded to discontinue prescribing this combination, although it has given me good results in many cases, especially those complicated with coughs.

Henry Troth: Thee need not be so modest, for our great Dr. Coxe, who undoubtedly instigated the resolutions of the University that have brought us together on this occasion, rather likes the fame which has attended the frequent use of his Syrup of Squills and Senega, which is even now being called for popularly under the name of "Coxe's Hive Syrup," though I doubt if this name will long continue, for the word "hives" is seldom used in these days to mean croup, being more frequently applied to a form of itching skin affection.

Peter Williamson (addressing the two previous speakers): Have either of you had any prescriptions from the famous Dr. Barton recently? It is for similar seasonal affections and contains Wine of Antimony, Paregoric, Spirit of Nitre, and several other ingredients, and on account of its appearance is being called "the brown mixture."

Henry Troth and several others reply simultaneously: Yes, we have many of these prescriptions at this season of the year.

Stephen North (raising his voice above the others): Friends, let us begin our labors upon the task which has been assigned to us.

(Members cease talking and look toward the speaker.)

Stephen North (continuing): I have asked Henry Troth to formulate the plan which has practically been agreed upon in our previous conferences, for we have been of one mind as to the objects of our labors and have differed only on some minor details.

Henry, has thee prepared the draft?

Henry Troth: I have, Stephen, and will read it if the Committee desires.

(All, in scattering replies): Read it, Henry.

Henry Troth reads the following:

"A very general impression appears to have prevailed amongst the druggists and apothecaries of this city for some time past, that from a concurrence of various circumstances, a departure from the correct customs and established principles of the drug and apothecary business has in some instances taken place. As a consequent effect there is deterioration of many drugs and medicines in constant use, and of great importance in practice, and medicines of inferior or sophisticated qualities are too often introduced into the shops. The want of proper pharmacological information on the part of some druggists and apothecaries who vend, and of physicians who buy, have mainly tended to the production of these irregularities.

"The mischiefs that are necessarily attendant upon such a state of things have frequently attracted the attention of those interested in the trade, and means to remedy them have repeatedly been in agitation.

"All attempts heretofore made in relation to effecting more amendment having proved abortive, a number of the druggists and apothecaries, at the suggestion of one of the Faculty of Medicine in the University of Pennsylvania directed the attention of the Trustees of that Institution to the subject, and in consequence they have created a degree of Master in Pharmacy, to be conferred on those who on examination, and having complied with certain requisites may be found possessing the necessary qualifications and information.

"The motives and views of the Trustees in thus proceeding are highly commendable, and as far as their plan extends will be useful. But as must be apparent to those most conversant with the species of abuses that exist in the business and require correction, the plan of the Trustees will not reach them, and whatever benefits may be derived from it must be prospective and slow in operation.

"This measure of the University has had, however, the happy effect of recalling the subject to the attention of the druggists and apothecaries. It has roused them to a sense of the propriety of placing their business on the respectable footing it ought to possess as a branch of the science of medicine, by eradicating from it all present and preventing a recurrence of future injurious practices, by creating the means of acquiring a perfect and scientific knowledge of drugs

and medicines, and the most approved modes of preparing them, and obtaining an acquaintance of sciences with their profession. These are desirable and highly important objects, and can only be effectually obtained by the interposition and active agency of the druggists and apothecaries themselves.

"The establishment of a College of Apothecaries, the attention of which will be constantly directed to the qualities of articles brought into the drug market in which subjects relating to their business and its objects can be discussed, and information beneficial and interesting to the trade communicated and the erection of a School of Pharmacy, whose lectures, written especially for the information and instruction of druggists and apothecaries, will be delivered, appear to the Committee the best adapted to effectuate the reformation generally desired in the business, and obtain the advantages which have been the object of much solicitude.

"They therefore recommend to this meeting an association to be formed by the druggists and apothecaries of this city, on the plan and for the objects above suggested, and with this view beg leave to offer a Constitution for such an Association for its consideration."

(Speaker pauses for comments from members.)

Daniel B. Smith: The plan, I think, meets with every suggestion that has been made, and avoids every objection. I recommend its adoption by this Committee, for presentation to the meeting to be held tomorrow.

Robert Milnor: I second the motion.

Samuel Biddle: I like the plan exceedingly, and I am particularly favorable to the commendatory remarks regarding the action of the University Trustees, for we cannot deny that they stepped in fearlessly to reform a condition in which we druggists and apothecaries should have made the first move.

Charles Allen: As one who has had little part in the deliberations of this Committee on account of illness, but who believes that it is the only remedy for the existing evils, I, too, second the suggestion.

Stephen North: Thee has framed a fine report, Henry, and I doubt not that it will be unanimously adopted by the meeting which we have planned to hold in Carpenters' Hall tomorrow, notice of which has already been sent to those who attended our first meeting on February 23d, and also to a number of the druggists and apothecaries who will now be glad to join us in a movement which has such an auspicious beginning, but who, I fear, will be but little interested except for their own possible profit and cannot be counted upon to continue as permanent members of an organization which will

need the continued and active support of those who have a greater breadth of vision than that encompassed by personal profit only.

Daniel B. Smith: I agree fully with what thee says, Stephen, for we must take the position that we desire to have our own apprentices educated more thoroughly than we have been in the sciences upon which our calling is based.

Henry Troth: I have here also a draft of a Preamble and Constitution for the College of Apothecaries, which we have agreed upon for the name of the new organization; shall I read them?

Stephen North: I think it unnecessary to prolong our meeting at this time, especially as these matters would better be generally discussed in the meeting which has been called for tomorrow. I therefore declare the meeting adjourned.

Daniel B. Smith: Now that we have formally adjourned, let us informally discuss the question of who shall head the new College as its first president.

Henry Troth: I am in favor of asking our venerable friend and former leader, Charles Marshall, for despite his advanced years his acceptance of the office would do much to bring success to the movement.

Dr. Jackson: I agree heartily with thy suggestion.

(Other members assent emphatically.)

Stephen: Then let us agree that, if at the meeting tomorrow, our plan is adopted without dissent, a few of us call upon Charles some time this week, unofficially, and lay the matter before him for his acceptance or rejection.

Daniel B. Smith: I think exceedingly well of thy plan and would suggest that thee head this informal delegation and pick thy own associates.

(Other members express assent.)

Stephen: I thank thee, Daniel, and also all the rest of you (*indicating by gestures the other members of the group*), and if I may make a suggestion I should like Daniel to be one of my associates upon this visit, and also Samuel P. Wetherill, who, although not a druggist nor apothecary, is a public spirited citizen, educated in science and interested in our cause, and who has privately expressed to me a desire to become a member of our organization when it is formed.

(All assent vigorously.)

Stephen: There is nothing further, I believe, that we can do at this time, but I would be glad if any or all of you would stay and continue our intercourse informally and in a social way.

(*Curtain.*)

SCENE IV. Wednesday, March 14, 1821. Evening.

(A room in the home of the venerable Charles Marshall, aged seventy-seven, the Nestor of Philadelphia Apothecaries, whose store at 56 Chestnut Street (now 214 Chestnut Street) has been in existence since 1729, when it was founded by his father, Christopher Marshall.

(Charles Marshall is seen seated in an easy chair. His daughter, Elizabeth Marshall, is busying herself about the room.)

Charles Marshall: Betsy, what is thee doing?

Elizabeth: I am only setting the room to rights, Father, for thee doubtless remembers that Stephen North is calling to see thee this evening and is bringing two other friends with him. Does thee know what the purpose of their visit is, Father?

Charles: Not precisely, but I feel that it is in some way connected with the movement of the druggists and apothecaries to form an association for the benefit of the calling; thee remembers that a meeting was held yesterday at which it was resolved to organize a College of Apothecaries at a future meeting to be held on March 27th.

Elizabeth: Yes, Father, Frederick Brown and Charles Ellis, who have attended both of the meetings in Carpenters' Hall, have told me about that. Does thee think perhaps that they will ask thee to become the President of the new College?

Charles: I hardly think so, for one of my advanced age and with my infirmities could hardly do justice to such an important undertaking.

Elizabeth: I hear a knock at the outer door; I doubt not they are now come.

(*Elizabeth goes to the door at the side of the room and greets the members of the delegation.*)

Elizabeth: Good evening, Stephen. Who is accompanying thee this evening?

Stephen: I have brought with me Daniel B. Smith and Samuel P. Wetherill, and we desire to talk with thy father if he is able to see us.

Elizabeth: Come in, friends; Father is here and is feeling quite well this evening.

(Stephen North, Daniel B. Smith and Samuel P. Wetherill enter, and after greeting Elizabeth shake hands with Charles Marshall, who remains seated and who greets each of them in a friendly manner.)

Charles: Be seated, friends, and state your mission.

Stephen: Our mission, Charles Marshall, is a very important one and yet it may be stated very briefly. I have brought with me two good friends of thine and mine to support me in a request which we have to make of thee.

Charles: What is it?

Stephen: It is that thee allow us to place thy name in nomination as President of the College of Apothecaries which is to be organized on March 27th.

Charles: Does thee not think that I am too old and feeble for such a responsible undertaking?

Wetherill: If we thought that we should not have come, Charles. We assure thee that if thee accepts we shall provide ample support in the selection of worthy officers to aid thee and lighten thy labors.

Smith: We feel, too, Charles, that the very success of our plans depends upon our getting the support of one who is so universally respected as thee is, one who can bring unity out of what might prove to be potential discord.

Charles: I am greatly honored by thy offer, but does thee know that two of my sons, Christopher and Charles, Jr., are among those who have been selected by the University of Pennsylvania for receiving the honorary degree of Master of Pharmacy?

Stephen: It matters not, for I now tell thee, confidentially, that the degree was offered to me, but that I refused it on account of my activities in connection with this pharmacists' movement.

Smith and Wetherill (in astonishment and simultaneously): The same is true of myself!

Stephen: Thee sees, Charles, that such an excuse will not avail thee, nor would it make any difference if it were to be offered to thee and thee accepted it. We have no quarrel with the University, and in our resolutions have pointed to them as being actuated by proper motives, although we differ with them in the manner of accomplishing the reform. I pray thee to accept our offer and be our first President.

Charles: In the face of such arguments and upon the solicitation of friends whom I esteem so highly, I cannot with propriety refuse. I will accept the Presidency if the members wish it so.

Stephen, Daniel and Samuel: Thank thee, thank thee, Charles.

Elizabeth (who has remained by her Father's side during the interview, addressing her father): I am glad, dear Father, that thee has accepted, for I feel it to be a worthy cause, and that thee can help it greatly.

(Turning and addressing the visitors): Have you seen the letters that have been published lately in Relf's Gazette? There are some among the apothecaries, at least, who are not of your mind as regards the kindly esteem in which the University should be held.

Stephen, Daniel and Samuel: No, Elizabeth, but we have heard of them.

Stephen: Has thee preserved them?

Elizabeth: I have them, and will read them to you if you like.

(All give assent.)

(Elizabeth reads the following communication signed "Apprentice.")

"Mr. Relf:

"If you think this worth an insertion in your paper, I would be much obliged to you.

"In one of your late press I noticed a resolution of the Faculty of the University of Philadelphia, that all the Apprentice Apothecaries must attend two courses of Lectures by two Lecturers for two seasons.

"Now if this resolution, which is a very important regulation in its base, was to be submitted to all the Druggists and Apothecaries without any alteration or amendment, would be putting themselves to a greater expense than is necessary to perfect themselves in their profession, and which is of greater importance, a great loss of time. For if an Apprentice had to attend two Lectures in the morning (which I believe is the case), two hours apiece from 9 to 11 and from 12 to 2, it would occupy his whole time, which would be a great loss to his employer.

"But I think there are a sufficient number of Apprentices in this city to support a chair, and I think that this city would be able to produce a man who is capable to fill this chair, who is by profession a druggist, and whose interest it will be to promote his profession. . . .

"What does Dr. C——, or any other Doctor care for the Apothecary if he gets his emolument? No! I say that if the Druggists submit to the resolution, they will lose their time and money, and

their profession will be none the better for it. Whereas it is very plain that if self interest is in the case it would be quite different.

"An Apprentice."

Elizabeth: Here is another. (Reads again.)

"UNIVERSITY VERSUS APOTHECARIES"

"We are apt to suppose that a body formed for the diffusion of knowledge of science, would act consistently with the spirit of its institution, and instead of countenancing ignorance and incapacity in pretenders and imposters, would make every effort to suppress and humiliate them; but degrading as the reverse would be, it appears from a recent advertisement in the public papers emanating from the University, that we are sometimes in error respecting the subject of the formation of such bodies. (To think) that a body that should be pre-eminent for knowledge, wisdom and discrimination should so far descend from its dignity and high standing as to concede its marked and decided sanction to the illegitimate and presumptuous aspirants to knowledge, is an act of such transcendent derogation, that view it in what light we may, no apology can be devised for it—this dignified concentration of wisdom not long since passed a resolution to grant degrees of Master of Pharmacy to the Apothecaries of this city (I presume if they are deemed competent to the exercise of their profession). Upon the promulgation of this resolution, the regular bred Apothecaries called a meeting which was numerously and respectable attended; upon taking into consideration the resolution of the University it was unanimously concluded to decline the honor intended them and that they considered themselves fully qualified to manage their own concerns, without the interference or dictation of any power, however exalted, or however competent. The result of this meeting was the formation of a College of Apothecaries, the object of which shall be to regulate the concerns of the business upon the principle of 'equal and exact justice'—to adopt the most efficient means of disseminating among themselves and their apprentices such information as will be conducive to render them in every respect fully adequate to the conducting of their business so as to give satisfaction to the public and do credit to themselves.

"It is contemplated that lectures on Pharmacy, Chemistry, and Materia Medica shall be delivered in this College and to grant diplomas to all those who have been regularly brought up to the business and attended these lectures, etc. Since the organization of this society the advertisement above alluded to of the University has appeared which offers the degree of Master of Pharmacy to any person engaged in the drug business without subjecting them to any examination whatever, and ('O shame, where is thy blush'), whether they are qualified or totally incapacitated, men are to be thus honored, thus privileged. It is well known that there are many persons in this business who know but little about it, who have obtruded themselves without having had any previous knowledge of it, who, so far from being capable of judging of the qualities or of compounding

medicines properly would hardly confide in their own skill if they themselves or families had occasion for physic. Could the diploma granted by the University convert such men into good apothecaries or would it not be a ridiculous burlesque upon the profession?

"As the business now stands the qualified or regular apothecaries having formed themselves into a society there will be none left to enjoy the honors of the University, but those whom the regular bred druggists have, as it were, rejected, or in other words, have not admitted into their association, and will the University be benefiting the community by granting degrees to those on whom is placed the signet of reprobation? 'Forbid it honor, forbid it justice.'

"Apis Bombilicus."

Elizabeth: There is another three-column protest, signed "Equity," which I will not read. His reason for opposing the action of the University of Philadelphia is that there should be free competition among apothecaries in order to keep prices from becoming too high, and apothecaries from becoming too scarce.

What do you think of such views?

Smith: If I had the renaming of the signature to the second epistle I would call the writer "Apis Bombasticus."

(All laugh heartily.)

Stephen: These idle vaporings are but ephemeral. I feel that our work must be built upon the foundation of mutual respect and possible co-operation in the future, between our College, the first of its kind in America, and the University of Pennsylvania, which is already a great and worthy institution.

(Curtain.)

Scene V. Wednesday, March 28, 1821. Morning.

Same as Scene II, with the same characters—Henry Troth and Peter K. Lehman.

Henry: Well, Peter, what was the final report of the Tellers at the election yesterday? Thee knows I had to leave as soon as the names of the major officers had been announced, and I was glad indeed that Charles Marshall was elected President, and that thy worthy cousin William was elected one of the Vice-Presidents along with Stephen North.

Peter: Yes, Henry, I am pleased, too, and also at the election of William Heyl as Treasurer and Daniel B. Smith as Secretary. I presume it is the list of Trustees concerning which thee is not informed.

Henry: It is so, Peter.

Peter: I have the list here and will read it. Both thee and I are included, as well as several of the friends who have been close to us in the work of the past five weeks. This is the list:

Samuel P. Wetherill, Chairman

Charles Allen

Samuel Biddle

Frederick Brown

Daniel Elliott

Samuel Jackson

Peter K. Lehman

Charles Marshall, Jr.

Thomas McClintock

Jeremiah Morris

Warder Morris

Daniel Thatcher

Henry Troth

Peter Williamson

Thomas Wiltberger

Henry M. Zollickoffer

Henry: Since I am included, I am glad that thee is also on the Board, for I have an idea, Peter, that the meeting which thee and I had on this selfsame spot some five weeks ago had much to do with the subsequent events which yesterday culminated in the adoption of the final plans for the establishment of a College.

Peter: I, too, believe that to be so, Henry.

Henry: These have been busy as well as trying times, Peter, but now I feel from the enthusiasm that pervaded the meeting yesterday, together with the fact that no less than 68 members of our calling have pledged themselves to support the College as charter members, our success is assured.

Peter: I think that if we are to build securely for future generations, we should incorporate the College.

Henry: I had not thought of that before but I feel that the step would be a wise one.

Peter: My cousin William, the First Vice-President of the College, who as you know, has been a member of the Legislature for some years, can readily have this matter attended to for us without any trouble.

Henry: Has thee held any converse with him as yet upon the subject?

Peter: Yes, and he has also suggested that the name of the College when incorporated should be changed to the Philadelphia College of Pharmacy.

Henry: Why does he propose this change?

Peter: Because if we retain the present title we will be bound to teach only such branches as will serve to educate apothecaries who sell and dispense at retail, while if we use the word "pharmacy," it will broaden the scope of the College and may prove of great value in the future.

Henry: I can see, too, that this would be a wise move, but inasmuch as there are those of our number who look not upon these matters with a generous viewpoint, let us not say anything to them at present about this proposed change.

Peter: Agreed. Has thee given any thought to the selection of the professors for the College and the chairs that they should fill?

Henry: Yes, Peter; I feel that we should have a professor of Pharmaceutical chemistry, and one who will lecture upon materia medica and pharmacy.

Peter: That seems proper for a beginning; and we should select men who are eminent in their fields, like those connected with the Department of Medicine of the University of Pennsylvania, where they have a number of men whose fame is more than local, including Dr. Hare, Dr. Barton, Dr. Physic, and Dr. Coxe.

Henry: There are a number of younger men available who are destined to become as great as any who are connected with the University. I have in mind Dr. Jackson of our own group, as a possibility, and also Dr. George B. Wood, who is doing good work in the private school for medical students now conducted by Dr. Joseph Parrish.

Peter: And I have in mind as a suggestion for the chemical chair an eminent Hollander, Dr. Gerard Troost, who is actively connected with the work of the Academy of Natural Sciences, on account of his interest in mineralogy.

Henry: Does thee know if we can afford to pay these men the value of their services?

Peter: I know not concerning that. I do know, however, that at the University of Pennsylvania the only members of the Faculty who are paid salaries are those who teach theology, the classics, and law, for the teaching of the natural sciences is deemed irreligious by many, and the professors in such branches as chemistry and botany must

obtain their remuneration from the students who attend the courses, by the sale of tickets, and from the proceeds of this income they must also furnish all apparatus and supplies.

Henry: I like not such an ungenerous spirit toward professors; we shall try to arrange our affairs in a more business-like manner, Peter.

Peter: Well, good day, Henry; I shall see thee at the meeting of the Board of Trustees tomorrow.

Henry: What, has the first meeting been called so soon?

Peter: Yes, Henry; there are still many matters to be discussed and planned, and I am pleased with the celerity with which things appear to be moving.

Henry: So am I, Peter, but where is the meeting of the Trustees to be held?

Peter: At Carpenters' Hall, as have all the other meetings of our organization. I feel that the dignity and nobility of the surroundings have had much to do with the success of our endeavors.

Henry: Good-bye then, Peter; I shall see thee tomorrow at Carpenters' Hall.

(Final curtain.)

THE TRANSMISSION SPECTRUM OF MERCURO-
CHROME

By Ellery H. Harvey

A RECENT INVESTIGATION of some of the properties of mercurochrome led to the determination of its absorption spectrum in the visible. Readings were made with Bausch and Lomb equipment, using the new improved Martens Photometer. The transmission figures were obtained on a 5 mm. layer of a 0.004 per cent. aqueous solution of the antiseptic, correcting for the absorption of the glass cell walls. Results have been placed in Table I.

TABLE I. TRANSMISSION OF MERCUROCHROME IN THE VISIBLE.

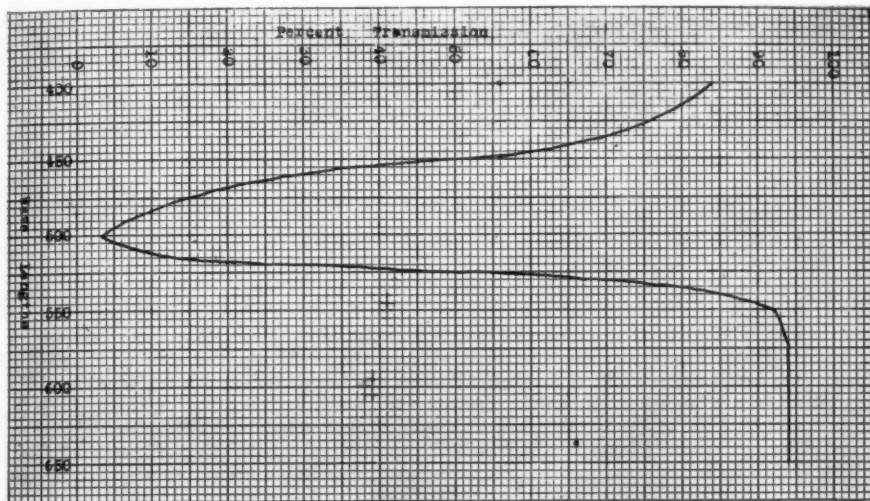
Wave Length	Per Cent. Transmission
400	84
425	76
450	51
462	31
475	15
487	9
500	3.5
506	5
512	10
518	21
525	46
550	92
575	94
600	94
625	94
650	94

Plotting percentage transmission against wave lengths in milimicrons in the usual manner, produces a curve having a deep characteristic absorption band in the blue-green, the maximum absorption occurring at about 500 mμ.

Using the identical technic described by Harvey¹ a 3 mm. layer of 0.01 per cent. mercurochrome transmitted during two hours 81.9

¹ Scientific Section, A. Ph. A., Rapid City meeting, 1929.

per cent. of the ultraviolet that is passed by water under the same conditions. The source of ultraviolet light is an enclosed carbon arc type lamp operating on 220 volts and 13 amperes, using solid carbons 12.7 mm. diameter. The light transmitted by the arc was as follows:



Ultraviolet Transmission of Mercurochrome

Wave length (millimicrons)	Per cent. Transmission
302	0
313	1.9
334	12.6
365	79.8
436	90.8

Effect of Ultraviolet on the Absorption Spectrum

A 2 per cent. aqueous solution of mercurochrome was placed in a clear quartz cell giving a layer 3 mm. thick and exposed for one and one-half hours to the rays of a Bausch and Lomb Automatic Electric Arc Lamp running at 110 volts, 4.5 amperes. Two 7 mm. National Carbon Company type K carbons were used as electrodes. The cell was placed six inches from the arc, the rays of the latter being brought to maximum intensity by the use of a quartz con-

denser. The mercurochrome was diluted and measured as described above. No difference in the readings was obtained indicating that under the conditions of the test, ultraviolet had no measurable effect on the visible transmission.

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ABSTRACTED AND REPRINTED ARTICLES

THE STABILITY OF INFUSION OF DIGITALIS, B. P.*

By Frank Wokes and G. K. Elphick (Rammell Scholar)

(From the Pharmacological Laboratory, Pharmaceutical Society of
Great Britain)

AN INFUSION was prepared by the pharmacopœial method from a sample of *Digitalis purpurea* leaf grown in England in 1929, 7 gm. of the air-dried leaf in No. 20 powder being infused with 1000 c.c. of boiling water. On the same day the activity of the freshly prepared infusion was determined by the usual cat method. A portion of the infusion was taken and diluted with an equal volume of water, to which sodium chloride was added to produce a concentration of 0.9 per cent. in the dilution. Each c.c. of the dilution therefore represented 3.5 mgm. of the dry powdered leaf. The minimum lethal dose of the dilution was determined in the usual manner on three cats, which gave figures of 19.9, 15.3 and 13.3 c.c. per kgm. The average of these figures is 16.2 c.c. per kgm., equivalent to 0.0567 gm. of the dry powdered leaf. An 0.5 per cent. infusion of the standard digitalis powder has an average minimum lethal dose of 15.2 c.c. per kgm., equivalent to 0.076 gm. of the dry powdered leaf. The sample therefore contained 134 per cent. of the activity present in the standard leaf.

This infusion was preserved by the addition of chloroform (2 c.c. to 700 c.c. of infusion) and set aside in a brown stoppered bottle at room temperature. At intervals the activity of the infusion was redetermined on small portions from which the chloroform had been removed by passing through a rapid current of air for fifteen minutes, each portion being diluted with saline as before, so that 1 c.c. of the dilution was equivalent to 3.5 mgm. of the dry powdered leaf.

The results of these experiments are given in Table I. It will be seen that there was no definite alteration in activity. The second

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assay on December 13 gave an average minimum lethal dose for the dilution of 14.6 c.c. per kgm., which differs from the result of the first assay by 11 per cent., less than the experimental error of the method. The third assay on December 17 gave an average minimum lethal dose of 16.0 c.c. per kgm., and the fourth assay on December 30 gave 14.2 c.c. per kgm. Since the differences between all those figures are less than the experimental error of the method for the number of cats employed, no definite change could be said to have been observed in the activity of the infusion, and certainly no deterioration had taken place.

TABLE I.—STABILITY OF INFUSION OF DIGITALIS, B. P., PRESERVED WITH CHLOROFORM.

Infusion made 10/12/29 from English leaves and preserved with 0.3 per cent. of chloroform.

Date of Assay.	Minimum Lethal Dose of Infusion Diluted with an Equal Volume of Saline (c.c. per kgm.).		Activity Expressed as Percentage of Initial Activity.
	Individual Experiments.	Average.	
December 10	19.9		
	15.3		
	13.3	16.2	100
December 13	14.0		
	15.8		
	14.2	14.6	111
December 17	15.5		
	20.6		
	15.1		
December 30	12.0	16.0	101
	16.3		
	11.1	14.2	114

A second series of experiments was carried out on an infusion prepared in the same manner from the same leaf, but preserved by the addition of 0.064 per cent. of thymol. The results are given in Table II. The initial assay gave a minimum lethal dose of 16.03 c.c. per kgm., indicating an activity in the leaf of 136 per cent. of that in the standard leaf. Assays after standing for three, seven and

twenty-two days gave respectively the following minimum lethal doses:—13.9, 16.1 and 19.9 c.c. per kgm.

In this second series of experiments it was not possible to remove the preserving agent, thymol, from the infusion before administration. The amount of thymol actually received by any cat did not exceed 8 mgm. per kgm., which is too small to exert any appreciable effect.

A series of experiments was also carried out on an infusion to which no chloroform had been added. No definite loss of activity was detected after seven days' storage at room temperature. This infusion without chloroform did not keep well. By the end of a week it was obviously decomposing and unfit to be dispensed. On the other hand, the infusions preserved with chloroform or thymol showed no signs of decomposition even after three weeks.

TABLE II.—STABILITY OF INFUSION OF DIGITALIS, B. P., PRESERVED WITH THYMOL.

Infusion made 7/2/30 from English leaves and preserved with 0.064 per cent. of thymol.

Date of Assay.	Minimum Lethal Dose of Infusion Diluted with an Equal Volume of Saline (c.c. per kgm.).		Activity Expressed as Percentage of Initial Activity.
	Individual Experiments.	Average.	
February 7	12.6		
	20.5		
	15.0	16.03	100
February 10	14.9		
	14.7		
	12.3	13.9	116
February 14	18.5		
	10.6		
	19.3	16.1	100
March 1	26.6		
	15.1		
	18.0	19.9	80

In all the experiments the kymographic tracing of the pulse and post-mortem examination of the heart confirmed that death was due to the characteristic action of the digitalis glucosides.

CONCLUSIONS

Infusion of Digitalis, B. P., if preserved by the addition of 0.3 per cent. of chloroform or 0.064 per cent. of thymol, does not lose any appreciable amount of activity for at least three weeks, as shown by the cat method.

While this paper was in the press our attention was drawn to a paper published recently by Haag and Hatcher (*J. Amer. Med. Assoc.*, 1929, 93, 26) in which are described results in close agreement with those which we have obtained. Infusions of digitalis which had been kept sterile by bringing them to the boiling point and sealing them up immediately in completely filled bottles were tested at intervals by the cat method. No deterioration was detected after more than two years storage, but when seven to eleven years had lapsed, about half the activity had disappeared. Clinical tests on patients suffering from heart disease showed an eight year old sample of infusion of digitalis to exert the typical digitalis action in usual doses. The conclusions drawn were that, contrary to general opinion, a properly preserved infusion of digitalis does *not* undergo rapid deterioration, and that when loss of activity does take place after prolonged storage, it is not attended by the development of any dangerous or toxic substances.

THE ONE HUNDRED AND EIGHTH ANNUAL
COMMENCEMENT

of the

PHILADELPHIA COLLEGE OF PHARMACY AND
SCIENCE

THE One Hundred and Eighth annual commencement was held in the college auditorium at 8 P. M. on Wednesday evening, June 4th, in the presence of an audience numbering about a thousand and which filled the auditorium to capacity. The Rt. Rev. Francis Marion Taitt, Bishop Coadjutor of Pennsylvania, pronounced the invocation. The candidates for graduation were presented to Dr. Wilmer Krusen, President of the College, by Dr. Julius W. Sturmer, Dean of Science, and Dr. Charles H. LaWall, Dean of Pharmacy.

It was a fine and memorable occasion, bringing to a close a week of intense activities.

Baccalaureate services were held at the Friendly Church at Forty-second and Pine Streets, Rev. D. Swain officiating. On Monday evening the Faculty and Board of Trustees had entertained the graduating class at a banquet, served in the College Auditorium.

Tuesday was Alumni Day, well attended and well enjoyed. Athletics, dietetics and other hectic performances had filled the day with pleasure and the dance, of evening, terminated a day of real college entertainment.

At the Commencement services degrees were conferred upon 196 students.

The degree of Master of Pharmacy (*honoris causa*) was conferred upon the following:

Millicent Renshaw LaWall, a graduate of the class of 1904, who had the unique distinction of receiving the class honors during each of the three years of her college career and many other prizes for outstanding scholastic work. For several years, she served as secretary to the chairman of the U. S. P. Revision Committee, the late Dr. Joseph P. Remington and, in recent years, has collaborated with her husband, Dean Charales H. LaWall in many scientific investigations. Mrs. LaWall has been active for a number of years on the Executive Board of the College Alumni Association and, for several years past, has been serving as graduate advisor to women students.

Bertha Leon De Graffe Peacock, a graduate of the Ph. G. Class of 1896. She also completed the special chemistry course in 1897 and received prizes for special work. Mrs. Peacock is a former president of the Alumni Association and has been active upon its Executive Board for many years, as well as in the Pennsylvania and American Pharmaceutical Associations. Because of Mrs. Peacock's absence in Europe, the degree was conferred upon her in absentia.

Professor John Grover Beard, a member of the faculty of the Department of Pharmacy of the University of North Carolina, at Chapel Hill, a former president of the American Association of Colleges of Pharmacy and chairman of the National Pharmaceutical Syllabus Committee.

Joseph C. Carlin, chemical director of the Tennessee Products Corporation of Nashville, Tennessee, a nationally known industrial

Edgar J. Roberts

GRADUATES IN PHARMACY

Herman Alexander	Hyman Hoffman
Sterling A. Altemus	Francis S. Hughes, Jr.
Ralph Baldino	Warren J. Hunsicker
Franklin J. Berlin	Thomas J. Irvin
Joseph S. Berman	Herman H. Jaffe
Irving H. Bernett	Earl M. Johnson
Glen R. Bitner	David C. Kaliner
Harrison R. Boggs	Charles F. Kamor
George E. Casper	Charles F. Keiter
Pasquale Cajano	Hugh J. Kennedy
Morris Chasman	Robert B. Kime
Willard F. Cheeseman	John S. Kintzer
Santo F. Clement	Edgar L. Kline
Raymond D. Clyne	Daniel M. Knabb
Robert E. Connell	Alphonse H. Konecny
Edward M. Davies	John P. Konicki
Alfred J. D'Angelo	Lydia J. Krajewski
Charles J. DeFrancesco	Louis Lankin
Christopher J. Delaney	Francis J. Lawrence
Foster C. Dinklocker	Edgar N. Leas
Louis DiRiego	Harold S. Lefkowitz
John H. Dombalagian	Irving R. Lev
Theodore R. D'Orazio	Jacob M. Levin
John J. Dougherty	Samuel I. Levin
Marie L. Dreier	Philip Lipshutz
Albert H. Dresnin	Harry Litvak
Richard L. Durst	Richard M. Lush
Meyer B. Epstein	Joseph R. Luskin
William E. Evans, Jr.	Sylvester B. Malinowski
Julius W. Fisher	Paul D. Malyszko
Arthur C. Foulke	Joseph Margolis
Harry M. Freed	Abram L. Markuze
Benjamin J. Fridkin	Paul A. Marsh
Stephen W. Frontis	Edward J. Martin
Edward P. Gannon	Thomas J. McCormick
Harold H. Goldblum	Gertrude C. McGuire
Morris A. Goldstein	Harold E. McLaughlin
Thomas P. Goldy	Harold F. Meredith
George J. Gray	Llywellan E. F. Minnich
Harvey O. Green	Ralph E. Mock
Charles R. Guffey	Francis W. Mohr
Elizabeth Harbourt	Samuel Myers
John E. Hatrak	Clastine C. Neece
Elmer F. Hinkle	Max Nexer
Zachary Hirsch	Wayne C. Nichols

Joseph F. Oakley
 Samuel D. Ominsky
 Robert E. Pantall
 Hyman W. Perlman
 Alfred P. Pescatore
 McNair C. Poe
 Milton Poulshock
 Ralph Pressman
 Louis A. Reber
 Henry A. Regelman
 Calvin M. Reigel, Jr.
 Joseph W. Rosbrow
 Joseph Rosen
 William J. Rossi
 Harry F. Ruhl, Jr.
 Charles J. Rumfola
 John W. Runyon
 Joseph E. Ruzicka
 Agnes M. Rynkiewicz
 David Sadel
 Samuel M. Saltzman
 Samuel Sandler
 George B. Schoonmaker
 Walter L. Sechrist
 Margaret M. Shannon
 Donald A. Shiffler
 Nathan B. Sibulsky

Albert Silver
 Marcel Simons
 Paul M. Smigel
 Clyde W. Smith
 Frank Snyder
 Elwood V. Squier
 Robert A. Steel
 Samuel Stern
 Herbert J. Stommel
 Paul Stover
 William F. Suter
 Joseph B. Suwalski
 Ethel H. Szo
 Gustav H. Tafel, Jr.
 Thomas W. Tierney
 Francis L. Toole
 Thomas J. Travascio
 Leon E. Tull
 Lawrence P. Tweed
 Donald J. Vannucci
 Luther L. Wertz
 Morgan L. West
 Walter A. Yermal
 Edward J. Yorke
 Benjamin Zeff
 John C. Ziegler
 Donato Zeoli

CANDIDATES WHO HAVE COMPLETED SPECIAL COURSES AND HAVE QUALIFIED FOR CERTIFICATES

(This does not include students who completed courses in these subjects
 for credits for a degree)

IN BACTERIOLOGY

Aaron Brenner
 Edward S. Brown
 Luther G. D. Johnke
 Allen L. Keller
 Louis Jaffe

Isadore Kurland
 Gaetano Sambuco
 Al Silver
 George L. Weldon
 Charles Westall

IN CLINICAL CHEMISTRY

William Biser
 Aaron Brenner
 Edward S. Brown
 Vera C. Cianfrogna

David E. Cohen
 Mildred M. D'Agostino
 Margaret M. Flanagan
 Louis Jaffe

Luther G. D. Johnke	Feodoro Maristan
Allen L. Keller	Eugene Paletz
Frank A. Krutzke	Gaetano Sambuco
Isadore Kurland	Al Silver
Salvatore Leoncavallo	Abraham Weisman
Glenn V. Williams	

IN PHYSIOLOGICAL ASSAYING

George E. Byers	Martin F. Carmody
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AWARD OF PRIZES 1930

GRADUATES IN PHARMACY (Ph. G.)

DESIGNATED AS "DISTINGUISHED"

With General Average of not less than 90%

Harrison R. Boggs	Samuel M. Saltzman
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DESIGNATED AS "MERITORIOUS"

With General Average between 85% and 90%

Ralph Baldino	Harry Litvak
Morris Chasman	Paul D. Malyszko
Willard F. Cheeseman	Harold E. McLaughlin
John H. Dombalagian	Hyman W. Perlman
Albert H. Dresnin	Louis A. Reber
William E. Evans, Jr.	Calvin M. Reigel, Jr.
Arthur C. Folke	Charles J. Rumfoia
Elizabeth Harbourt	Joseph E. Ruzicka
Hyman Hoffman	Agnes M. Rynkiewicz
Francis S. Hughes, Jr.	Samuel Sandler
Thomas J. Irvin	Nathan B. Sibulsky
John P. Konicki	Albert Silver
Francis J. Lawrence	Elwood V. Squier
Philip Lipshutz	Donald J. Vannucci

The Proctor Prize, a gold medal for the highest average of the class, is awarded to:

SAMUEL M. SALTZMAN.

The William B. Webb Memorial Prize, twenty dollars and a bronge medal for the highest general average in the branches of Operative Pharmacy, Analytical Chemistry and Pharmacognosy, is awarded to:

ARTHUR C. FOLKE.

With Honorable Mention to:

Harrison R. Boggs	Samuel M. Saltzman
Willard F. Cheeseman	Walter L. Sechrist
William E. Evans, Jr.	Elwood V. Squier
Francis S. Hughes, Jr.	Leon E. Tull
Donald J. Vannucci	

The Frank Gibbs Ryan Prize, a gold medal endowed by the Class of 1884, as a memorial to their distinguished classmate, for the best average in the Chemical and Pharmaceutical Laboratory Courses, is awarded to:

HARRISON R. BOGGS.

With Honorable Mention to:

Morris Chasman	Elizabeth Harbourt
Raymond D. Clyne	Francis S. Hughes, Jr.
William E. Evans, Jr.	Calvin M. Reigel, Jr.
Arthur C. Folke	Samuel M. Saltzman
Walter L. Sechrist	

The Remington Memorial Prize, \$20, offered by the Estate of Joseph P. Remington, for the highest general average in the examinations of Operative Pharmacy and Dispensing, is awarded to:

HARRISON R. BOGGS.

With Honorable Mention to:

Arthur C. Folke	Agnes M. Rynkiewicz
Francis J. Lawrence	Samuel M. Saltzman
Philip Lipshutz	Walter L. Sechrist
Charles J. Rumfola	Nathan B. Sibulsky
Leon E. Tull	

The Mahlon N. Kline Theoretical Pharmacy Prize, a Troemner Agate Prescription Balance, offered by the Mahlon N. Kline Estate for the highest average in Theory and Practice of Pharmacy, is awarded to:

ALBERT H. DRESNIN.

With Honorable Mention to:

William E. Evans, Jr.	Samuel M. Saltzman
Francis J. Lawrence	Samuel Sandler
Harry Litvak	Nathan B. Sibulsky
Harold E. McLaughlin	Elwood V. Squier

The Bacteriology Prize, \$25, offered by the H. K. Mulford Company, to the candidate for graduation making the highest general average and the highest grade on a special examination, in Bacteriology and Serum Therapy, is awarded to:

SAMUEL M. SALTZMAN.

With Honorable Mention to:

Francis S. Hughes, Jr.

Edgar J. Roberts

Harrison R. Boggs

Louis A. Reber

Gold Medals awarded by the Alumni Association to the student of the Ph. G. and B. Sc. Graduating Class who attains to the highest scholastic average, are awarded to:

Ph. G.—SAMUEL M. SALTZMAN.

B. Sc.—WILLIAM E. HANFORD.

MEDICAL AND PHARMACEUTICAL NOTES

IODINE, MICRO-DETERMINATION OF, IN NATURAL PRODUCTS. J. F. Reith. (*Pharm. Weekblad.*, 1929, 66, 829.) In the titration of very dilute iodine solutions with thiosulphate, the result depends on the degree of acidity of the solution and on the amount of potassium iodide present. This is due to the formation of sulphate in alkaline solutions, and the error becomes appreciable when the pH value of the solution is higher than 7. A correction must be applied if necessary. Chlorides, bromides, nitrates, nitrites, sulphates, chlorates, bromates, and ammonium salts all produce an appreciable error in the titration of traces of iodine in aqueous solutions, and the author gives curves showing the effect of each of these ions. He recommends titration after oxidation to iodate with bromine water, but any nitrites should be removed by means of sodium azide before the addition of bromine. For the determination of traces of iodine in sodium chloride, sea-water, etc., the salt, after heating with potassium carbonate to destroy organic matter, and reducing any iodate with sulphurous acid, is extracted with alcohol, which dissolves out the iodide. For the determination of iodine in organic materials, the method of ignition with alkali in an open dish cannot give reliable results; combustion in a closed apparatus in a stream of oxygen is to be recommended. The ash and the contents of the absorption apparatus may then be extracted with alcohol. G. M. Through *Quart. Jour. of Pharm.*

CANCER AND EDUCATION—More than half the cases of cancer will be cured, instead of less than one-tenth, when the public has learned to seek an examination at the first warning sign, Dr. Joseph Colt Bloodgood of the Johns Hopkins University, predicted at the recent meeting of the alumni association of Temple University School of Medicine.

If this education of the public is carried to its possible limitations, cancer of the skin and mouth certainly and cancer of the cervix probably will be placed among the preventable diseases.

This does not mean that there is any new cure for cancer, Dr. Bloodgood emphasized. It rests simply on the application of what is already known.

"We have no cure for cancer to announce," Dr. Bloodgood said. "The only treatments for cancer today that are established are surgery and irradiation by X-rays and radium. Nor has there been discovered any differential stain for the cancer cell, nor any other method for its recognition beyond the microscope and the X-rays. There is yet no blood test for cancer similar to the Wassermann test for syphilis or the metabolism test for toxic goiter. Nor are we any nearer, apparently, in the discovery of the exact cause of cancer which might lead to a preventive or curative treatment as we have now for diphtheria."

The necessity for a nation-wide cancer survey, such as the Harris resolution now before the Senate would make possible, was stressed by Dr. Bloodgood. In spite of the fact that the physician is seeing the cancer patient earlier today than formerly, and that he is better able to treat cancer, the number of deaths from cancer is increasing. The reason for this would be determined by the survey.

Education of the public must go on, Dr. Bloodgood said. Likewise the physician must be educated to recognize cancer in its earliest stages, when it is most readily cured. The development of a stain that would differentiate the cancer cell from other cells would greatly facilitate early diagnosis.

Better methods of diagnosis are particularly important in the borderline cases, where correct diagnosis may save the patient a distressing and possibly a mutilating operation. The borderline cases are very often found in tumors of the breast.

"The danger in the recognition of the early stage of cancer is not so much that cancer will be overlooked, but many lesions not cancer will be diagnosed cancer and receive unnecessary treatment," Dr. Bloodgood said. "When it is a little spot like a mole or wart on the skin, or small spot in the mouth, or an easily removed lump, it makes no difference whatever, because such areas, irrespective of whether they are cancer or not, should be completely removed if they do not disappear after irradiation. But when the lesion is in the bone, or the breast, or the tumor is of such size that its complete removal would be mutilating, the exact recognition of lesions that are not cancer will save mutilation."

METALLIC SODIUM—Revelation of the fact that sodium, the metal of extreme purity, remarkable chemical activity, and low electrical resistance, costs so little by volume is made in a comparison of prices of metals in a recent issue of *Metals and Alloys*.

Nickel is the most expensive common metal by the cubic foot, that volume costing \$192.50. The same measure of tin sells commercially for \$143.75; copper, \$72.50; aluminum, \$39.50; lead, \$39; antimony, \$31.50; zinc, \$22; and ingot iron and sodium, \$11.50.

Although sodium is now as cheap as iron, if more uses for it were found it might be produced in quantity for a third the present cost. Its occurrence, in close chemical combinations with other elements is common. Electrical decomposition is necessary to separate it.

Unlike most metals, sodium is so active chemically that to be kept pure it is immersed in kerosene. In air a film of oxide immediately forms on its surface. It is slightly lighter than water and melts a trifle below the boiling point of water.

In spite of the fact that sodium cannot be strung from pole to pole and, even if it could, it would be quickly eaten away by the oxygen of the air, it might actually be used as a much cheaper and more efficient conductor of electricity than copper, *Metals and Alloys* speculates. A sodium conductor need be only a third the weight of a copper conductor to carry the same electricity, though it would be three times as large. At prices for sodium which would prevail if such conductors came into use, it would cost only a fraction as much as the equivalent copper.

"If we filled a thin copper or austenitic stainless steel tube, strong enough to carry the load," the article continues, "with sodium, and could make provision to avoid difficulties from the high coefficient of expansion of sodium, from the likelihood that it would creep down into the sag of the cable if we left space inside the tube for expansion, and from the danger that would ensue if such a conductor did break, and could work out the problem of making joints and connections, we should have a cheaper conductor than either solid copper or aluminum. Crazier things have been done."

Sodium is now used chiefly as a modifier in aluminum-silicon alloys and as a hardener for lead. The chemist makes it 99.9 per cent. pure; certainly the metallurgist can find more uses for such a metal, the article challenges.—*Science Service*.

NEWS ITEMS AND PERSONAL NOTES

The Pharmaceutical Society of Great Britain during May placed upon its distinguished roll of honorary members the names of retiring Dean Henry H. Rusby and Dean-Elect Henry V. Arny of the College of Pharmacy of Columbia University. These honors were awarded because of the scientific achievements of Dean Rusby and Dean-Elect Arny and also to emphasize the delightfully cordial relations which have existed for a number of years between the School of Pharmaceutical Society in London and the New York College.

DRUEDING MUSEUM DEDICATED—The new Drueding Museum on the third floor of the College Building was equipped and furnished through the generosity of Charles C. Drueding and Henry G. Drueding, twin brothers and both graduates of the class of 1877. For many years they have been executive heads of Drueding Brothers Company, importers and distributors of chamois, at Fifth and Master Streets in Philadelphia.

The formal opening and official dedication took place on Alumni Day, June 3, in the presence of many interested alumni attending the College reunions. President Krusen and Deans LaWall and Sturmer spoke at the exercises.

Henry G. Drueding is a member of the College Board of Trustees.

ALUMNI FROM MANY CLASSES PARTICIPATE IN REUNION ACTIVITIES JUNE 3—With the 1930 Alumni Reunion, the class of 1880 qualified for membership in the Semi-Centennial Builders of the Alumni Association. Ten of the thirty-one living members of the class were present at the Alumni Day Celebration. The reunion was planned under the leadership of Dr. Samuel W. Gadd of Philadelphia. Others present were Charles B. Carl, Dr. George E. Dahis, Daniel J. Fry, Louis H. Holden, Isaac Lavenson, William J. Pechin, Lewis J. Steltzer, William G. Toplis and Dr. George C. Webster.

From the classes before 1880, among those who were registered were Otway E. Hutchings 1870, Thomas H. Potts 1871, David G. Potts 1873, Charles Griffith 1876, Ernest W. Herrmann 1876, Howard B. Sides 1876, J. S. Beetem 1878, Andrew G. Fry 1879, and Charles H. B. Roberts 1879.

Other classes were present in large numbers.

DI-PHEN—E. R. Squibb & Sons, manufacturers of pharmaceutical products, announced this week a new antiseptic with many revolutionary features, named Di-Phen. It was produced after many years of experimentation in the Squibb laboratories. Clinical authorities have tested the new antiseptic and, it is said, declare it has a number of advantages that hospitals and physicians have been seeking for years.

Di-Phen, according to Squibb executives, is non-poisonous to persons even when swallowed, yet in full strength it kills germs instantly on contact, being three times as strong as carbolic acid. It has a phenol coefficient of 3.0. Hospital superintendents who have tried it say Di-Phen does not injure fabrics or instruments and does not stain agate or metal utensils, and is non-corrosive.

Furthermore it does not have the characteristic disagreeable odor of phenols and cresols and is highly endorsed for personal hygiene when used in proper dilutions. It has been tested many times in the last six months against both typhoid and staphylococcus aureus by standard methods.

In addition to the ten-gallon size for hospital use, Di-Phen will be marketed for household use in three-ounce and twelve-ounce bottles.

CITRALKA—Parke, Davis & Company have recently announced the addition of Citralka to their list of products. It is described as a palatable, effervescent combination, in disc form, of alkalinizing salts, principally the citrates and tartrates of sodium and potassium, together with salts of magnesium, calcium and lithium. Each disc contains 60 grains (4 grams) of the combined salts.

The constituents of Citralka are in proper proportion to aid in maintaining the desired physiological alkalinity of the blood plasma, and thus counteract systemic acidosis. Citralka aids in building up the alkali reserve in the conditions in which the carbon-dioxide combining power of the blood is subnormal. At the same time the alkali tends to overcome hyperacidity of the stomach without damage to the gastric secretions.

The product comes in a tubular bottle containing twenty-five discs and the usual dose is one or two discs dissolved in a glassful of cold water.

BOOK REVIEWS

FORMULAIRE DES MEDICAMENTS NOUVEAUX, pour 1930. Dr. R. Weitz. Published by J. B. Baillière, 19 Rue Hautefeuille, Paris.

476 pages. Price 32 francs.

This marks the thirty-fourth revision of the famous formulary of new remedies, originally the work of Bocquillon-Limousin. Dr. Weitz has been charged with the revision of this annual compilation for many years and does his work with an accuracy and completeness which renders the book an authority in its class.

Acquisitions to the 1930 list are numerous, comprising new insulin medications, ergosterols, the vitamins, new organo-metallic bodies.

A most useful addendum is the list of synonyms and the list of manufacturers supplying the various remedials.

I. G.

SPECIAL SHORT-COURSE IN PRACTICAL PHARMACY. By John Cameron, Ph. C., F. C. S. Peiping Union Medical College, Peiping, China.

This work, in English, is prepared for Chinese students in pharmacy and is based largely upon British Empire practice.

However, it contains a wealth of information which might be well included in the practice of retail and hospital pharmacy in this country.

There is neither the customary sequence nor completeness to the work, yet compressed as it is to twelve lectures or "lessons" it probably serves the purpose for which it is designed.

An "eye-opener" to American pharmacists is noted in the character of the water supplied to hospital pharmacies in China. Mostly it is well water with a total solid content of from 250 to 1200 parts per million, rather an unusual figure when contrasted with tap water in Philadelphia, often showing less than 50 parts per million of solids.

Cameron wisely urges a more careful supervision of water supplies.

Ten volume peroxide he prepares from the 30-volume product. Better still is the 100-volume product supplied to the textile bleacheries and which hereabouts is well stabilized with cinchonine or acetanilid.

I. G.

COD LIVER OIL EMULSIONS. By John Cameron. (A Reprint from *China Med. Jour.* XLIV, 3, 229.)

A very complete survey of small scale methods of preparing emulsions, the dry or Continental method being preferred because of the whiteness and homogeneity of the finished product.

POSOLGY—PERCENTAGES—POISON. By John Cameron, Peiping, China.

This is a pocket volume comprising tables largely compiled from the current revision of the British Pharmacopœia. Posological tables, antidotes, solubility tables, neutralization and other useful tables constitute the bulk of this "vade mecum" of the Chinese dispenser. Mr. Cameron is to be congratulated on the splendid service which he is performing in the medical and pharmaceutical fields of the great fallow country where he is now carrying on.

I. G.

AIDS TO THE MATHEMATICS OF PHARMACY. By Arthur W. Lupton, Ph. C., M. C., Leeds, England. Published by William Wood & Company, New York. Cloth bound, 95 pages. Price \$1.50.

In our country arithmetic has been high sounding enough to apply to that phase of pharmacy that deals with integers. To call it mathematics would only lend more terror to the term insofar as the already terrorized neophyte in pharmacy is concerned.

Of all the subjects in the curriculum here is where confusion is worse confounded. Yet in Professor Lupton's typically clear Anglo-Saxon exposition of the subject there is a real smacking of

mathematics, as distinguished from the fundamental arithmetic so prevalent in American pharmaceutical text-books.

This little book presupposes a knowledge of simple arithmetic, which for the high school graduates hereabouts is presupposing a bit too much.

And it discusses logs and antilogs!! Based upon Empire practice it hardly fills the bill in an American classroom—except perhaps upon the teacher's desk.

I. G.

POCKET MEDICAL DICTIONARY—GOULD'S. Ninth Revised Edition.
Published by P. Blakiston's Son & Co., Philadelphia.

This is a pocket medical dictionary giving the pronunciation and definition of the principal words used in medicine and the collateral sciences.

It includes very complete tables of the arteries, muscles, nerves, bacteria, bacilli, micrococci, spirilla, and thermometric scales, and a revised dose-list of drugs and their incompatibilities, in the English and metric systems of weights and measures, based upon the tenth revision of the U. S. Pharmacopœia. It contains also a revised veterinary dose table.

The unusual compactness and completeness of this little volume clearly entitles it to a place upon the pharmacist's five-foot shelf.

I. G.

SCIENCE IN THE KITCHEN: The Selection, Care, and Service of Foods. A series of eight radio talks by research specialists of the Mellon Institute of Industrial Research, Pittsburgh. Broadcast from the University of Pittsburgh Studio of Station KDKA, and published by the University of Pittsburgh.

The titles of this series are as follows: The Well Planned Kitchen, by Dr. George H. Beal; The Intelligent Purchasing of Foods, by W. W. Duecker; The Care of Food in the Home, by E. W. Morrison; Good Proportions of Foods, by Gerald J. Fox; The Uses of Milk in the Home, by Lawrence W. Bass; Good Meals for the Young Homemaker, by E. R. Harding; Food for Young Children, by Robert N. Wenzel; The School Lunch, by R. F. Beard.

Being radio talks they are of necessity short and condensed. While they contain nothing particularly new to those who keep up to date in household lore, efficiency knowledge, and intelligent feeding to families, a great deal of the information given is an unknown quantity to the majority of housewives, but which they ought to know, and the radio is an excellent medium to reach people who are not likely to be reached in any other way.

Dr. Beal's talk, however, contains the surprising (to some of us) statement that a high gloss paint will catch dirt more easily and retain it more tenaciously than one well-thinned with turpentine to reduce the gloss. His prediction that we may in the future have colored rubber sinks and drain boards to lessen breakage of dishes is comforting, and his score card for kitchen by which one may estimate the efficiency of one's own kitchen arrangements, is interesting.

M. R. L.